UNIVERSITY OF DELHI

RATAN TATA
LIBRARY

RATAN TATA LIBRARY

Cl. No. XM5:6.73.N43-N4 H5

Ac. No. 52807

This book should be returned on or before the date last stamped below. An overdue charge of 10 Paise will be collected for each day the book is kept overtime.

29 NOV 1980

2 ~~OCT 1985~~

~~2/4/80~~

NATIONAL BUREAU OF
ECONOMIC RESEARCH

Financial Research Program

NATIONAL BUREAU OF ECONOMIC RESEARCH

OFFICERS

N. I. Stone, *Chairman*
Shepard Morgan, *President*
H. M. Groves, *Vice-President*
George B. Roberts, *Treasurer*
W. J. Carson, *Executive Director*
Martha Anderson, *Editor*

DIRECTORS AT LARGE

Chester I. Barnard, *President, New Jersey Bell Telephone Company*
David Friday, *Consulting Economist*
Oswald W. Knauth, *New York City*
H. W. Laidler, *Executive Director, League for Industrial Democracy*
Shepard Morgan, *Vice-President, Chase National Bank*
George B. Roberts, *Vice-President, National City Bank*
Beardsley Ruml, *Treasurer, R. H. Macy and Company*
Harry Scherman, *President, Book-of-the-Month Club*
George Soule, *Director, The Labor Bureau, Inc.*
N. I. Stone, *Consulting Economist*
J. Raymond Walsh, *Director, Department of Education and Research, Congress of Industrial Organizations*
Leo Wolman, *Columbia University*

DIRECTORS BY UNIVERSITY APPOINTMENT

E. W. Bakke, *Yale*
C. C. Balderston, *Pennsylvania*
W. L. Crum, *Harvard*
Guy Stanton Ford, *Minnesota*
H. M. Groves, *Wisconsin*
Clarence Heer, *North Carolina*
Wesley C. Mitchell, *Columbia*
Paul M. O'Leary, *Cornell*
T. O. Yntema, *Chicago*

DIRECTORS APPOINTED BY OTHER ORGANIZATIONS

Percival F. Brundage, *American Institute of Accountants*
Frederick C. Mills, *American Statistical Association*
C. Reinold Noyes, *American Economic Association*
Boris Shishkin, *American Federation of Labor*
Warren C. Waite, *American Farm Economic Association*

RESEARCH STAFF

Wesley C. Mitchell, *Director*
Moses Abramovitz
Arthur F. Burns
Solomon Fabricant
Milton Friedman
Thor Hultgren
Simon Kuznets
Ruth P. Mack
Frederick C. Mills
Geoffrey H. Moore
Raymond J. Saulnier
George J. Stigler
Leo Wolman
Ralph A. Young

Relation of the Directors to the Work of the National Bureau of Economic Research

1. The object of the National Bureau of Economic Research is to ascertain and to present to the public important economic facts and their interpretation in a scientific and impartial manner. The Board of Directors is charged with the responsibility of ensuring that the work of the Bureau is carried on in strict conformity with this object.

2. To this end the Board of Directors shall appoint one or more Directors of Research.

3. The Director or Directors of Research shall submit to the members of the Board, or to its Executive Committee, for their formal adoption, all specific proposals concerning researches to be instituted.

4. No report shall be published until the Director or Directors of Research shall have submitted to the Board a summary drawing attention to the character of the data and their utilization in the report, the nature and treatment of the problems involved, the main conclusions and such other information as in their opinion would serve to determine the suitability of the report for publication in accordance with the principles of the Bureau.

5. A copy of any manuscript proposed for publication shall also be submitted to each member of the Board. For each manuscript to be so submitted a special committee shall be appointed by the President, or at his designation by the Executive Director, consisting of three Directors selected as nearly as may be one from each general division of the Board. The names of the special manuscript committee shall be stated to each Director when the summary and report described in paragraph (4) are sent him. It shall be the duty of each member of the committee to read the manuscript. If each member of the special committee signifies his approval within thirty days, the manuscript may be published. If each member of the special committee has not signified his approval within thirty days of the transmittal of the report and manuscript, the Director of Research shall then notify each member of the Board, requesting approval or disapproval of publication, and thirty additional days shall be granted for this purpose. The manuscript shall then not be published unless at least a majority of the entire Board and a two-thirds majority of those members of the Board who shall have voted on the proposal within the time fixed for the receipt of votes on the publication proposed shall have approved.

6. No manuscript may be published, though approved by each member of the special committee, until forty-five days have elapsed from the transmittal of the summary and report. The interval is allowed for the receipt of any memorandum of dissent or reservation, together with a brief statement of his reasons, that any member may wish to express; and such memorandum of dissent or reservation shall be published with the manuscript if he so desires. Publication does not, however, imply that each member of the Board has read the manuscript, or that either members of the Board in general, or of the special committee, have passed upon its validity in every detail.

7. A copy of this resolution shall, unless otherwise determined by the Board, be printed in each copy of every National Bureau book.

(Resolution adopted October 25, 1926,
and revised February 6, 1933, and February 24, 1941)

Financial Research Program: Committee

In the planning and conduct of all research under the Financial Research Program the National Bureau benefits from the advice and guidance of its Committee on Research in Finance. The functions of this committee are to review and supervise the specific research activities of the Program staff.

RALPH A. YOUNG, Chairman pro tempore—University of Pennsylvania; Director, Financial Research Program

RAYMOND J. SAULNIER, Secretary—Barnard College, Columbia University; Research Staff, National Bureau of Economic Research

BENJAMIN HAGGOTT BECKHART—Columbia University; Director of Research, Chase National Bank

WILLIAM J. CARSON—University of Pennsylvania; Executive Director, National Bureau of Economic Research

ERNEST M. FISHER—Director, Research in Mortgage and Real Estate Finance, The American Bankers Association

DAVID FRIDAY—Consulting Economist; Director, National Bureau of Economic Research

E. A. GOLDENWEISER—Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System

F. CYRIL JAMES—Principal and Vice-Chancellor, McGill University

WALTER LICHTENSTEIN—Vice-President, First National Bank of Chicago

WALTER L. MITCHELL, JR.—Director of Surveys, Research and Statistical Division, Dun & Bradstreet, Inc.

WESLEY C. MITCHELL—Columbia University; Director of Research, National Bureau of Economic Research

SHEPARD MORGAN—Vice-President, Chase National Bank; President, National Bureau of Economic Research

WILLIAM I. MYERS—Dean, College of Agriculture, Cornell University

JACK H. RIDDLE—Economic Adviser, Bankers Trust Company

GEORGE BASSETT ROBERTS—Vice-President, The National City Bank; Treasurer, National Bureau of Economic Research

WOODLIEF THOMAS—Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System

DONALD S. THOMPSON—Research Staff, National Bureau of Economic Research

ROBERT B. WARREN—Institute for Advanced Study

JOHN H. WILLIAMS—Dean, Littauer School, Harvard University; Vice-President, Federal Reserve Bank of New York

LEO WOLMAN—Columbia University; Research Staff, National Bureau of Economic Research

DONALD B. WOODWARD—Research Assistant to the President, Mutual Life Insurance Company of New York

STUDIES IN BUSINESS FINANCING

CORPORATE CASH BALANCES

1914-43

Manufacturing and Trade

by

FRIEDRICH A. LUTZ

NATIONAL BUREAU OF ECONOMIC RESEARCH
NEW YORK 1945

COPYRIGHT, 1945 BY NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.
1819 BROADWAY, NEW YORK 23, N. Y. ALL RIGHTS RESERVED

PRINTED IN THE UNITED STATES OF AMERICA BY
JOHN B. WATKINS COMPANY

PREFACE

THIS MONOGRAPH ON CORPORATE CASH BALANCES in manufacturing and trade, undertaken as a special inquiry under the Financial Research Program's War Financing Project, was prompted by the spectacular growth in corporate cash balances since the outbreak of World War II, and by the question of the significance of this growth to the functioning of the financial system during and after the conflict.

So often in investigations of limited or specific objective, a demand soon develops to extend the scope of investigation and to make the fullest possible use of available data. In this instance the demand was especially compelling because of the need for historical perspective in judging the significance of wartime developments; in order to evaluate the abnormal, some reference base is required. This compulsion to expand the scope of inquiry was reinforced by another. In contemporary theories of the value of money and of the role of money in business fluctuations, the behavior of cash balances of consumers and business enterprises plays a central part. Yet theorists have never had an adequate body of empirical information from which to derive hypotheses or to test them. In other words, the initial problem of analyzing changes in the cash holdings of enterprise during the war period led into a strategic area, well-stocked with assumptions but poor in data. For these reasons the study was enlarged to its present scope, covering developments since the beginning of World War I.

The present study has been limited to manufacturing and trade corporations, and to samples of companies in each field, because consistent, tested financial data are available chiefly for these groups. The time period covered, 1914-43, is similarly explained; however, it covers a reasonably long time span, including two war periods of four years each and two decades of peace.

The study is included in the National Bureau's Studies in Business Financing because of its close relationship to other monographs in this series which have been published under the Business Financing Project of the Financial Research Program. Primary records of corporate financial data compiled under this Project have many uses aside from the specific purpose for which they were prepared, and it is the desire of the National Bureau's Committee on Research in Finance that these materials be fully exploited, with the object of contributing to a better understanding of how business enterprises finance their operations in good times and bad. From time to time as resources permit, supplementary studies covering special corporate financial problems will be issued.

The present study is sponsored jointly by the Economics Division of the Institute for Advanced Study and the Financial Research Program. Its author, Dr. Friedrich A. Lutz, is a member of the Institute's economics staff, on leave of absence from Princeton University where he is a member of the Faculty in Economics. The participation of the Financial Research Program was made possible in 1942 by a two-year grant from the Carnegie Foundation for a study of the impact of the war on business financial structure. The merging of research interests to explore a vital financial problem has resulted in a more adequate and thorough study than could otherwise have been produced.

We wish to acknowledge our debt to collaborators in the Financial Research Program for their generous and searching criticisms of the two drafts of this study. These include several university specialists, the author's associates at the Institute for Advanced Study, the economists of a number of banks, the technical experts of government agencies, and the members of the special committee appointed by the American Institute of Accountants to cooperate with the National Bureau's Committee on Research in Finance.

The statements made and the conclusions reached in the study are the sole responsibility of the author and do not necessarily represent the opinions of those who criticized the first draft or of the organizations that furnished financial support for the study.

RALPH A. YOUNG

January 1945 *Director, Financial Research Program*

AUTHOR'S ACKNOWLEDGMENTS

IN THE PREPARATION OF THIS STUDY I have received valuable suggestions and criticisms from the group of experts who were kind enough to examine the first and second drafts of the manuscript. I am particularly grateful to Percival F. Brundage and Charles H. Towns, both members of the American Institute of Accountants, to Clark Warburton of the Division of Research and Statistics of the Federal Deposit Insurance Corporation, and to Frederick C. Dirks of the Board of Governors of the Federal Reserve System. Messrs. Dirks and Warburton not only wrote lengthy memoranda on the drafts of the study but they participated in a conference on the first draft at the Institute for Advanced Study with Walter W. Stewart and Robert B. Warren, both of the Institute's economics staff, and Ralph A. Young as the other participants.

I also am greatly indebted to Avram Kisselgoff, research associate of the National Bureau's Financial Research Staff, who made important contributions to the study. In particular, he developed the method of measuring "free" cash and prepared a number of correlation studies used in the analysis. My wife, Vera C. Lutz, collaborated on Chapters 8 and 9 and contributed ideas in frequent discussions. Ralph A. Young was in constant touch with me during my work on the manuscript and gave valuable suggestions concerning content and form.

Members of the staff of the National Bureau's Financial Research Program contributed substantially to the study by their capable handling of the typing and statistical work. Special thanks are due to Muriel Praete Fega, who bore the brunt of the statistical work, to Helen Morphy, Molly Silver, and Ruth Gross, who prepared the charts, and to Mildred Courtney and Ruth Finnegan, who supervised the typing of the manuscript.

I cannot conclude these acknowledgments without thanking the editor, Dorothy Wescott. She did more to the manuscript than is usually understood by "editing," and her work has added greatly to the clarity and readability of the study.

FRIEDRICH A. LUTZ

CONTENTS

Preface vii
Author's Acknowledgments ix
List of Tables xii
List of Charts xiii
THE SETTING AND THE FINDINGS (1-8)
  Summary of Principal Findings 3

1. THE MOVEMENT OF CORPORATE CASH BALANCES (9-16)
  Groups of Corporations 13
  Summary 16

2. RELATION OF CASH BALANCES TO OTHER ASSETS IN THE BALANCE SHEET, 1919-39 (17-29)
  Factors Influencing Changes in Corporate Cash Balances in Relation to Other Assets 17
    Period of Business Contraction 17
    Period of Business Expansion 19
  Method of Investigation 20
  Statistical Analysis 23
    Large Manufacturing Corporations 23
    Medium-Sized and Small Manufacturing Corporations 28
  Summary 29

3. RELATION OF CASH BALANCES TO TOTAL RECEIPTS AND EXPENDITURES, 1919-39 (30-36)
  Summary 36

4. CASH AND THE VOLUME OF TRANSACTIONS, 1919-39 (37-50)
  Cash Requirements and Cash Holdings 37
  Statistical Procedure 40
  Relation Between Cash Balances and Payments 42
  Summary 50

5. ANALYSIS OF "FREE" CASH (51-59)
  The Role of Bank Debts 51
    Summary 53
  The Role of Profits 54
  The Role of Marketable Securities 56
    Summary 59
  The Role of Dividends 59

6. LIQUIDITY RATIOS AND CASH BALANCES (60-66)
  Summary 66

7. THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS, WORLD WAR I (67-71)
  Summary 71

8. THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS, WORLD WAR II (72-84)
  Limitations of the Data 72
  Postwar Reserves 73
    Possible Decline in Inventory Values 74
    Postwar Conversion of Plant and Equipment 74
    Deferred Repairs and Maintenance 74
    Renegotiation of Government Contracts 75
    Dismissal Compensation 75
  Liquidity Position of Manufacturing Corporations 77
  Summary 84

9. SOME OBSERVATIONS ON THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS IN WORLD WAR II (85-92)
  Summary 92

10. TRADE CORPORATIONS (93-102)
  Interwar Period 93
  World War I 98

World War II 100
Summary 102
APPENDIX A—DESCRIPTION OF SAMPLES (103-105)
APPENDIX B—INFLOW AND OUTFLOW OF CORPORATE FUNDS (107-109)
APPENDIX C—DESCRIPTION OF DATA (110-111)
APPENDIX D—SUPPLEMENTARY TABLES (113-123)
APPENDIX E—SOURCES AND DESCRIPTIONS OF SERIES IN CHARTS (124-125)
INDEX 126

List of Tables

1. Indexes of Cash Balances of Large Manufacturing Corporations and of Total Means of Payment, 1914-21 68
2. Liquidity Position of Sample C of Large Manufacturing Corporations, 1915-22 69
3. Composite Balance Sheet and Selected Income Items, 1939 and 1943, for Sample B of Large Manufacturing Corporations 78
4. Liquidity Position of Sample B of Large Manufacturing Corporations, 1937-43 79
5. Liquidity Position of Medium-Sized and Small Manufacturing Corporations, 1940-43 83
6. Liquidity Position of Sample B of Large Trade Corporations, 1915-22 99
7. Liquidity Position of Sample A of Large Trade Corporations, 1937-43 100
D-1. Year-End Figures for Total Means of Payment and Corporate Cash Balances 113
D-2. Selected Financial Data for Samples of Large Manufacturing Corporations 114-18
D-3. Selected Financial Data for Sample of Medium-Sized and Small Manufacturing Corporations 119-21
D-4. Selected Financial Data for Samples of Large Trade Corporations 122
D-5. Selected Financial Data for Sample of Medium-Sized and Small Trade Corporations 123

List of Charts

1. Year-End Figures for Total Means of Payment and Corporate Cash Balances 10
2. Ratio of Year-End Corporate Cash Balances to Total Means of Payment 11
3. Indexes of Year-End Cash Balances of Manufacturing Corporations and of Total Means of Payment 14
4. Year-End Cash Balances of Samples of Large Manufacturing Corporations 15
5. Net Absorption or Release of Funds, by Major Asset Classes, of Samples of Large Manufacturing Corporations 24
6. Net Change of Total Funds of Samples of Large Manufacturing Corporations 25
7. Total Cash Payments and Total Cash Receipts of Sample of Large Manufacturing Corporations (Sample B) 31
8. Major Components of Cash Receipts and Cash Payments of Sample of Large Manufacturing Corporations (Sample B) 32
9. Differences Between Major Components of Cash Receipts and Cash Payments of Sample of Large Manufacturing Corporations (Sample B) 34
10. Estimated Annual Cash Payments and Average Cash Balances of Sample of Large Manufacturing Corporations (Sample B) 43
11. Ratio of Average Cash Balances to Estimated Annual Cash Payments of Samples of Manufacturing Corporations 45
12. Average Cash Balances, Estimated Transaction Cash, and Estimated "Free" Cash of Sample of Large Manufacturing Corporations (Sample B) 46
13. Average Cash Balances, Estimated Transaction Cash, and Estimated "Free" Cash of Sample of Medium-Sized and Small Manufacturing Corporations 47
14. Estimated Total Liquid Funds, Liquid Funds for Transaction Purposes, and "Free" Liquid Funds of Sample of Large Manufacturing Corporations (Sample B) 48
15. "Free" Cash and Ratio of Net Income to Net Worth of Sample of Large Manufacturing Corporations (Sample B) 55
16. Year-End Cash Balances and Holdings of Marketable Securities of Sample of Large Manufacturing Corporations (Sample B) 57

17. Year-End Liquidity Ratios of Sample of Large Manufacturing Corporations (Sample B) 61
18. Year-End Liquidity Ratios of Samples of Medium-Sized and Small Manufacturing Corporations 64
19. Estimated Annual Cash Payments and Average Cash Balances of Samples of Large Trade Corporations 94
20. Liquidity Ratios of Samples of Trade Corporations 96
B-1. Absorption and Release of Funds, by Major Asset Items, of Samples of Large Manufacturing Corporations 108
B-2. Changes in Cash Dividends, Net Income, and Funds from Outside of Samples of Large Manufacturing Corporations 109

STUDIES IN BUSINESS FINANCING

CORPORATE CASH BALANCES 1914-43

Manufacturing and Trade

NBER FINANCIAL RESEARCH PROGRAM

THE SETTING AND THE FINDINGS

SINCE THE BEGINNING OF THE WAR, bank deposits as a whole have increased sharply, with the rise in business deposits being particularly marked. Between the end of December 1939 and September 1944 adjusted demand deposits of all commercial banks in the United States increased by 120 percent. According to surveys[1] by the Board of Governors of the Federal Reserve System about 63 percent of all demand deposits of banks on July 31, 1944 were held by domestic business enterprises. This figure indicates the paramount importance of cash balances held by business, since a large part of such balances consists of demand deposits.

Cash balances give rise to serious problems, two of which are noted here. First, since the cash balance policy of business enterprise determines the rate of turnover of a large part of demand deposits, it can greatly affect the volume of payments and thus pose difficult problems for monetary management, particularly in the immediate postwar period. Second, the use of the cash balances of business has important implications at the present time for the financing of the war: The greater the amount of cash that business holds in addition to what is necessary for its operations, the smaller the amount of government bonds that business buys and, therefore, the greater the amount of bonds the government has to sell to individuals or to the banks.

It would be wrong, however, to assume that the importance of the behavior of cash balances is being realized now for the first time. As far back as the late twenties the cash balance policy of enterprise attracted attention. Corporations and other business units then lent part of their cash balances on call to stock exchange members in order to take advantage of the high call loan rate which existed at that time. They were accused, rightly or wrongly, not only of contributing to the boom on the stock exchange by lending their cash on call, but also of feeding the financial markets at the expense of the markets for commodities.

In the thirties corporate cash balances again gave rise to heated discussions. During most of this period business allegedly held "idle" cash, i.e., cash balances in excess of current operating needs. Some economists accused private enterprise of contributing to the stagnation of the economic system by holding excess cash balances (instead of investing them) and thereby counteracting the stimulating effect of deficit financing. Others pointed out that one cannot expect enterprise in a profit economy to invest unless there is a reasonable prospect of making a profit.

---

[1] See *Federal Reserve Bulletin*, November 1944, pp. 1069 ff.

No matter what stand is taken in these controversies, the mere fact that they have arisen is proof enough that the cash balance policy of enterprise must be considered of great importance to the economic system as a whole. The present study proposes to show how cash balances held by business actually behaved over the last three decades, 1914-43, to analyze why they behaved as they did, and to discuss some of the implications of the present cash balance position of business. Chapters 2-6 are devoted to a detailed analysis of the period between the two wars, 1919-39, and Chapters 7-9 deal with developments in World Wars I and II. The discussion is centered around manufacturing corporations, but a short analysis of the cash balances of trade is undertaken in Chapter 10.

The study is based primarily on compilations of annual financial statements of samples of manufacturing corporations in two size groups, large corporations (over $5 million total assets) and medium-sized and small companies ($50 thousand to $5 million total assets). A description of these samples, which were collected in connection with the Financial Research Program's Studies in Business Financing, is presented in Appendix A.[2]

Assets of our sample of 78 large manufacturing corporations amount to some 40 to 45 percent of the assets of all large manufacturing corporations in the country. The assets of our sample of 73 medium-sized and small manufacturing corporations, on the other hand, constitute a very small part of the total assets of all medium-sized and small corporations. However, all the evidence that could be gathered — such as the behavior of other samples of medium-sized and small manufacturing corporations, which are available for a limited number of years — indicates that the *direction* of the movement shown by cash balances of our sample does typify their size class.[3]

---

[2] These samples have been used in other studies in this series. See Albert R. Koch, *The Financing of Large Corporations, 1920-39,* and Charles H. Schmidt and Ralph A. Young, *The Effect of War on Business Financing: Manufacturing and Trade, World War I* (both studies, National Bureau of Economic Research, Financial Research Program, 1943).

For our trade samples the numbers of corporations included are small. Although for trade as a whole no generalizations concerning the liquidity position of corporations can be made from an examination of our samples, a comparison of the movements of the cash balances of our trade samples and those of the manufacturing groups seems warranted.

SUMMARY OF PRINCIPAL FINDINGS

Does the behavior of corporate cash balances over the period 1919-39 show a definite pattern and, if so, what are the factors determining this pattern? How have the first and second World Wars influenced the movement of corporate cash balances? These are questions that the present study attempts to answer. To this end cash balances (and cash balances plus marketable securities) are examined in relation to the work they have to do, i.e., to payments; therefore, the ratio of cash (and of cash plus marketable securities) to payments plays the central role. Also, the relation of cash balances to other items of the balance sheet is examined and the factors behind this relation are analyzed. In addition, the movements of corporate cash balances are studied against the background of changes in the total means of payment, of which cash balances form a part.

The reader must be warned that the following summary gives only a broad outline of the findings of the study. Not all the results could be indicated in a summary of a few pages; neither could necessary modifications of these results be stated here, nor all the terms be defined.

In the first four years of World War II the total means of payment in the United States increased by 78 percent whereas cash holdings of the sample of large manufacturing corporations used in the present study rose by only 47 percent. Furthermore, if the cash holdings of these corporations are related to their payments, it is found that the ratio of cash (average of two successive year-end figures) to payments in 1943 was not much higher than that in 1937, when the ratio was the lowest of any year since 1929. On the basis of these standards of comparison, it cannot be said that large manufacturing corporations had any "excess" cash liquidity in 1943.

---

[3] For a more detailed statement see C. H. Schmidt and R. A. Young, *op. cit.*, pp. 85 ff.

A different result is obtained if all liquid funds (cash plus marketable securities) are related to payments. The ratio of liquid funds to payments in 1943 was considerably above the 1937 ratio, which was the lowest in the entire period, 1916-43. But in 1943 factors were present which necessitated a higher liquidity of corporations, the most important of them being increased tax liabilities. If these various factors are taken into account, it appears that large manufacturing corporations in 1943 had not increased their liquidity beyond what was necessary to provide for expected payments. This does not mean that at the end of the war when reconversion sets in on a large scale they cannot draw on cash or marketable securities for the purpose of reconversion; these two types of assets will have increased further in 1944 and some of the factors that necessitated a high liquidity position in 1943 may disappear after the war, or at least diminish in importance. Whether their marketable securities and cash, together with what the corporations may expect from the government following contract termination and under various provisions of the income and excess profits tax law, are sufficient for reconversion needs cannot be precisely estimated. It is not possible to predict with any accuracy the extent to which corporations may draw funds from the capital market and the banks during the period of reconversion.

World War I is the period in which corporations, under the impact of the various war loan drives, bought marketable securities on a large scale for the first time, and marketable securities have continued to be a significant item up to the present among corporations' assets. At the end of World War I the liquidity position of large manufacturing corporations was higher than at the beginning, whereas the reverse was true for large trade corporations. Yet not only the latter but also large manufacturing corporations relied on outside funds to finance plant expansion and inventory during the boom that followed the first World War.

During the twenties large manufacturing corporations appear to have held no more cash than was required by their volume of transactions. The ratio of cash to payments (and also cash plus marketable securities to payments) rose sharply in the depression years of the early thirties, fell from 1933 to 1937, and then rose again in 1938, a year of business contraction. In other words, the velocity of circulation of the cash balances of large manufacturing corporations was relatively stable in the twenties, declined in the depression after 1929, rose in the upswing of 1934-37, and fell again in 1938.

Thus in the years of business contraction during the thirties, the large manufacturing corporations held what in this study is called, for lack of a better name, "free" cash (or "free" liquid funds if marketable securities are included), i.e., cash (or cash plus marketable securities) that is not tied up by the volume of transactions. In the technical jargon of the monetary economist, they hoarded money. The movement of this inactive money shows an inverse correlation with the profit rate of the large companies. A primary reason, though not the only one, for this accumulation of "free" funds during 1930-33 is that the large manufacturing corporations were largely independent of bank credit in the year 1929 so that the reduction of their bank debts did not absorb the "surplus" cash which they accumulated, as a result of the depression, chiefly through liquidation of inventories and receivables. This situation is in marked contrast to that in 1921 when the large manufacturing corporations were heavily indebted to the banks and no "free" cash made its appearance. These comparisons suggest that in a system in which business is not indebted to the banks to any great extent — i.e., in which deposits are created or canceled through the purchase or sale of government securities — business fluctuations may reflect themselves not in an increase or decrease of bank loans and deposits but in a change in the velocity of circulation of deposits and, perhaps, in a change in ownership of deposits between consumers and enterprise.

In order that the holdings of "free" cash by large manufacturing corporations during the thirties may be placed in their true perspective, it should be mentioned that the increase in cash holdings never absorbed in any year more than 3.6 percent of the total cash receipts of the companies, and that the decrease never financed more than 2.7 percent of the cash payments. There was always a net contribution to the cash balance on current account, i.e., the difference between receipts from sales and operating expenditures was always positive. Nonoperating expenditures (mainly dividends and expenditures on fixed equipment) were always greater than cash receipts from sources other than sales (mainly cash receipts through increases in funds from outside). On noncurrent account there was therefore a drain on the cash balance, which was financed mainly by the surplus of cash receipts on current account.

Large trade corporations present a picture similar to the one for large manufacturing corporations in so far as the ratio of cash plus marketable securities to payments is concerned: This ratio shows a rise in periods of business contraction and a fall in periods of expansion. But for the large trade group the ratio of cash alone to payments in the thirties did not display the inverse cyclical pattern shown by the ratio of cash to payments for large manufacturing corporations. The contrasting movements of the ratios of total liquid funds to payments and of cash alone to payments indicate that the distribution of liquid funds between cash and marketable securities for trade corporations differed from that for manufacturing companies. During the present war years the percentage increases in cash and marketable securities (particularly the latter) for large trade corporations have been greater than for large manufacturing corporations. As measured by the ratio of liquid funds to payments, the liquidity of the trade corporations in 1943 was exceptionally high, mainly because of a decrease in receivables and a decline in fixed property, due to postponement of repairs and replacements.

For medium-sized and small manufacturing corporations the percentage increases in cash balances and marketable securities during World War II have been considerably greater than in the case of the large manufacturing corporations. Since the rise in the volume of payments for the smaller size group did not keep pace with the increase in their liquid funds between 1939 and 1943, their ratio of liquid funds to payments advanced sharply. In contrast to large manufacturing corporations the medium-sized and small manufacturing corporations definitely showed an increase in liquidity. The same is true for medium-sized and small trade corporations. Thus the group of large manufacturing corporations is the only one for which the level of liquidity in 1943 was not high.

During periods of business contraction in the thirties the increase in "free" cash of medium-sized and small corporations in both manufacturing and trade was small. Relatively great losses for these companies and probably also the retirement of bank debt absorbed the liquid funds that would otherwise have been accumulated. The phenomenon of "inactive" or "hoarded" corporate cash in the thirties is thus mainly one of large manufacturing corporations.

If the cash balance is considered in relation to other items of the balance sheet, it is found that in periods of business contraction during 1914-43 companies added to their cash balance through partial liquidation of inventories and receivables, and (with a time lag) through the postponement of replacements for fixed equipment. Most of the additional cash obtained in this way was paid out of the business, mainly by distribution of dividends which were not currently earned and by reduction of debts. When bank debts were of no particular importance and losses small, the cash balance tended to rise in relation to other assets during periods of business contraction, and to fall during periods of expansion. This cyclical pattern was traced by large manufacturing corporations in the thirties, but at no time during the period studied was it followed by medium-sized and small manufacturing concerns.

Cash balances of the corporate universe followed the general cyclical pattern shown by the total means of payment in the period 1926-36. In other words, the ratio of cash balances of *all* manufacturing and of all nonfinancial corporations (available since 1926) to the total means of payment was relatively stable during those years. Corporations neither gained cash at the expense of other cash holders nor lost cash to the rest of the cash holders to any marked degree.

A comparison of the movement of the cash balances of the samples of manufacturing corporations used in this study and that of the cash balances of all manufacturing corporations indicates that the behavior of the cash balances of the subgroups into which manufacturing corporations may be divided differs widely. In particular, cash balances of large manufacturing corporations showed the impact of the contraction period 1930-33 only in so far as their increase was retarded; cash balances of all manufacturing corporations, in contrast, declined. The main reason for this difference in behavior may be found in the fact that large manufacturing corporations were not dependent on bank credit.

* * * *

In its attempt to explain the influence of money on the economic system the so-called "cash balance approach" of monetary theory uses as its basic tool the ratio of cash to expenditures. Economists, who make use of this approach, analyze the factors determining this ratio for the various groups of cash holders, the reasons why these factors, and with them the ratio of cash to expenditures, change over time, and the effects of such changes on prices and production.

In so far as the present study investigates cash balances of corporations in relation to their payments, it is linked to this broader field of monetary theory. It is hoped that by analyzing corporate cash balances over a period of approximately thirty years this study makes a contribution to our empirical knowledge in this area of monetary research. At the same time, by throwing light on the behavior of corporate cash balances over this relatively long stretch of time, it may help provide a somewhat broader perspective for the current widespread discussion of the cash liquidity of corporations.

•1•

THE MOVEMENT OF CORPORATE CASH BALANCES

FROM 1914 TO 1929 THE TOTAL MEANS of payment in the United States rose almost without interruption; contraction then occurred until 1933; and this was followed by a fairly continuous rise, which has been accelerated sharply during the present war period. Against this background of the movement of the total volume of money will the development of corporate cash balances be studied in this chapter.

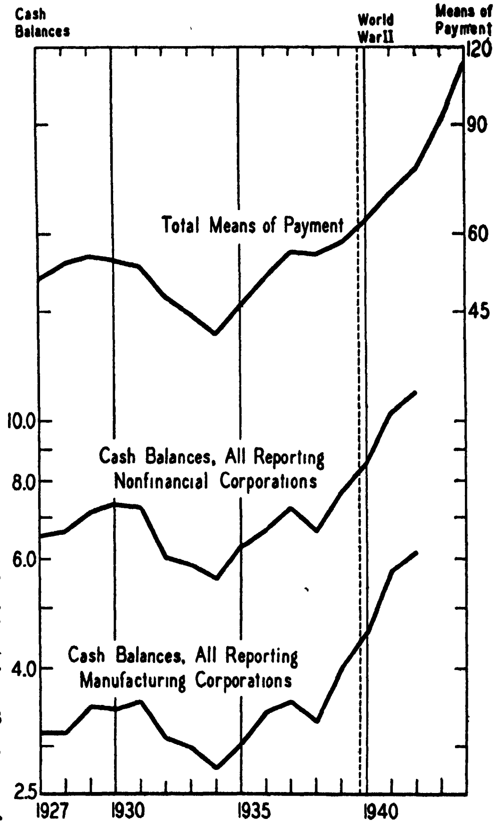
The most comprehensive figures on corporate cash balances are those compiled from corporation income tax returns by the Bureau of Internal Revenue and published annually in *Statistics of Income*; these data, however, are available only since 1926. Cash balances of all reporting[1] nonfinancial corporations (numbering from 260,000 to 320,000) and of all reporting manufacturing corporations (numbering from 80,000 to 85,000) are compared on Chart 1 with a series representing the total means of payment.[2] This last series includes demand and time deposits (with the exception of government deposits) of all banks (including savings banks) and currency in circulation outside the banks; it has been selected for the purpose of comparison since corporations hold their cash balances in the form of demand and time deposits as well as in the form of currency. The chart shows clearly that the three curves have the same pattern; that is, their year-by-year direction of movement and also their broad swings are similar.[3]

---

[1] That is, all corporations submitting balance sheets. Not all corporations subject to the corporation income tax submit balance sheets to the Treasury. Throughout the period between 1926 and 1941 the percentage of the number of returns with balance sheets to the total number of returns fluctuated between 86.7 and 89.1 percent, with the exception of 1926, when the percentage rate was 78.9, and of 1931, when it was 82.9. The ratio of the gross receipts of those corporations which did not submit balance sheets to the gross receipts of all reporting corporations fluctuated during the thirties between 1.7 percent (1937) and 4.9 percent (1936). Because of the discontinuance of the privilege of filing consolidated returns, the figures from 1935 onward are not strictly comparable with those for earlier years.

[2] The sources and description of the data used in all the charts in this study are given in Appendix E.

Chart 1—Year-End Figures for Total Means of Payment and Corporate Cash Balances



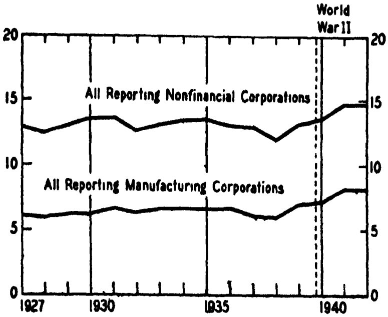
Not only the direction of the movement of the three series but also the amplitude is similar, at least up to 1936. The similarity of amplitude is revealed by Chart 2, which presents the ratios of the cash balances of both nonfinancial and manufacturing corporations to the total means of payment. Between 1926 and 1936 the ratios are relatively stable, that of manufacturing corporations varying between 5.8 percent and 6.6 percent, and that of nonfinancial corporations fluctuating between 12.3 percent and 13.6 percent.

The fluctuations of the ratios seem to be entirely noncyclical; in other words, the movements of the cash balances of all nonfinancial and of all manufacturing corporations reflect surprisingly well the cyclical ups and downs of the total means of payment over the years from 1926 through 1936. Through the latter part of the boom of the twenties, through the great depres-

---

[3] Exceptions to the similarity in year-to-year movements are 1929, when total means of payment and cash balances of manufacturing corporations fell whereas cash balances of nonfinancial corporations continued to rise, and 1930, when cash balances of manufacturing corporations rose whereas the two other curves declined. In 1937 the decrease in total means of payment was much less marked than that of cash balances.

Chart 2—RATIO OF YEAR-END CORPORATE CASH BALANCES TO TOTAL MEANS OF PAYMENT



sion with its severe contraction of bank deposits, and through the following revival, the corporations neither gained cash at the expense of other cash holders nor lost cash to them to any marked degree.

Between 1937 and 1940 the ratios increased — from 11.9 to 14.7 percent in the case of all nonfinancial corporations, and from 5.9 to 8.2 percent in the case of manufacturing corporations. This period, however, is too short to be used as a basis for drawing any far-reaching conclusions. It should be noticed that the greatest increase occurs in the year 1940 and probably reflects special circumstances due to the war.

For an analysis of the reasons for the relative stability of the ratio of cash balances of nonfinancial and manufacturing corporations to the total means of payment, a comparison of the cash balances of all business enterprises, grouped together, with the cash balances of consumers would be desirable. But since the published statistical material does not lend itself to such a comparison, the contrast made here is between the cash balances of nonfinancial corporations and the rest of the cash balances. The latter include cash balances of financial corporations, noncorporate enterprises, and consumers. Within this group, however, the cash balances of consumers undoubtedly dominate.[4] If this is so, it seems at first glance reasonable to expect that the total cash balances of financial corporations, noncorporate enterprises, and consumers will behave differently from the cash balances of corporate enterprises (excluding financial corporations). The aggregate of business enterprises during business contractions liquidate part of their inventories to consumers and increase them during boom periods. On the other hand, they diminish their wage and dividend payments in recession years and increase them in periods of business expansion. On this account, therefore, they are likely to receive more cash from consumers than they pay out to them during recession and vice versa during revival. It follows that at first during recession they increase their cash holdings at the expense of consumers. But this additional cash is not likely to remain in the hands of business enterprises. As long as they have bank debts they will use the cash to pay back the debts either because they are pressed by the banks for repayment or because repayment is made voluntarily in order to save interest charges. The additional cash then disappears to the extent to which it is used to reduce bank debts. Part of the additional cash may also find its way back to consumers through the retirement of long-term security issues. Moreover, faced with a smaller volume of business, enterprises do not need the same amount of money to carry on transactions and are therefore able to use part of the cash which was formerly required for transaction purposes to reduce their debts still further.[5] The reverse is true in business expansion. Such behavior tends to keep stable the ratio of business cash balances to the total means of payment.[6]

---

[4] The cash balances of nonfinancial corporations up to 1941 never amounted to more than 14.7 percent of the total means of payment. This leaves roughly 85 percent for noncorporate enterprises, financial corporations, and individuals. If the assumption is made that noncorporate enterprises held the same amount of cash balances as corporate enterprises (an estimate which is certainly too high), they would have had roughly one-sixth of this 85 percent. On the basis of figures for demand deposits held by financial corporations, published in the *Federal Reserve Bulletin* of May 1944 (p. 432), cash balances of such corporations can be estimated at slightly more than 6 percent of the total means of payment in the hands of noncorporate enterprises, financial corporations, and individuals. Thus the first two of these three groups did not hold more than one-quarter of all the balances in the hands of the three groups combined. The statement in the text therefore seems justified.

As long as deposits are either canceled or created through the reduction or the increase, respectively, in bank borrowing, the stability of the ratio of corporate cash balances to the total means of payment is explainable even though the aggregate of business enterprises tend to pay out more cash to consumers than they receive from them in an upswing and tend to receive more than they pay out in a recession. As will be indicated in Chapter 9, it is possible that the picture will be different if bank deposits are backed mainly by securities.

---

[5] Of course, it is possible that companies may choose to keep the same amount of money as before because of increased uncertainty concerning the future, which usually accompanies depressions.

[6] Business in recession, may, of course, choose to have a higher ratio of cash to expenditures than in revival, just as consumers may increase the ratio of their cash balances to their expenditures during recession. If the assumption is made that the expenditures of consumers as a whole fall in recession in about the same proportion as the expenditures of business enterprise, then a relatively stable ratio of business cash balances to the total means of payment indicates that if business and consumers increase the ratio of cash to expenditures in recession (as is undoubtedly the case), they do so in roughly the same proportion.

GROUPS OF CORPORATIONS

The relative movement of cash balances cannot be expected to be similar for all the subgroups into which corporations may be divided. For an analysis by subgroups, it is not possible to make use of *Statistics of Income* data for industries, since the figures are not comparable for successive years because of the frequent reclassification of companies.[7] However, a comparison of our samples of large and of medium-sized and small manufacturing corporations with the total for all reporting manufacturing corporations as given in *Statistics of Income* indicates clearly the wide variation in the behavior of cash balances of different groups of corporations.

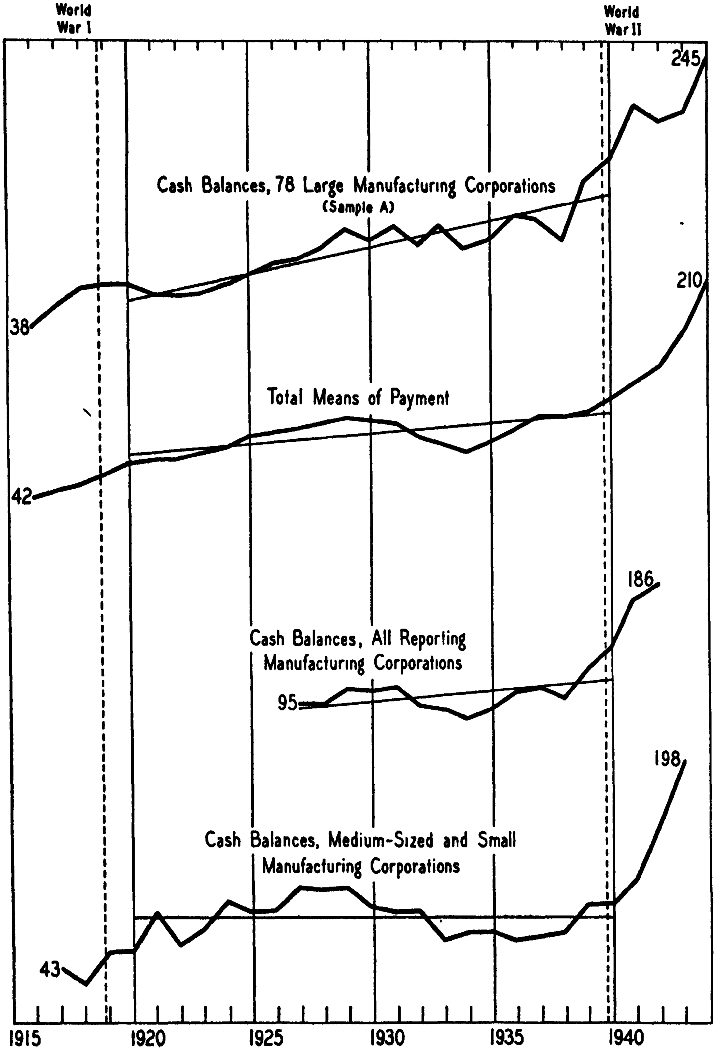
For such a comparison we have computed indexes (1926-29=100) for cash balances of large, of medium and small, and of all reporting manufacturing corporations, as shown on Chart 3. An index of the total means of payment also is presented on the chart. The straight lines for the three series excluding all manufacturing corporations are trend lines based on data for the period 1919-39; for the all manufacturing series, the trend is based on the years 1926-39. Four significant facts are revealed by the comparison.

(1) The trend line for cash balances of large corporations, based on the interwar period, is steeper than that for total means of payment and also that for all reporting manufacturing corporations. This can be accounted for in part by the growing importance in the economy of the large manufacturing corporations in the sample. Of the 78 companies which constitute our sample of large corporations shown in Chart 3, 45 publish sales figures. Since the cash balances of these 45 companies show, on the whole, the same movements as those of the 78 (see Chart 4), the smaller group can be considered representative of the larger sample. If the sales of the 45 companies are compared with the value of output of the entire manufacturing industry (as given by the biennial census of manufactures), the growing relative importance of the

---

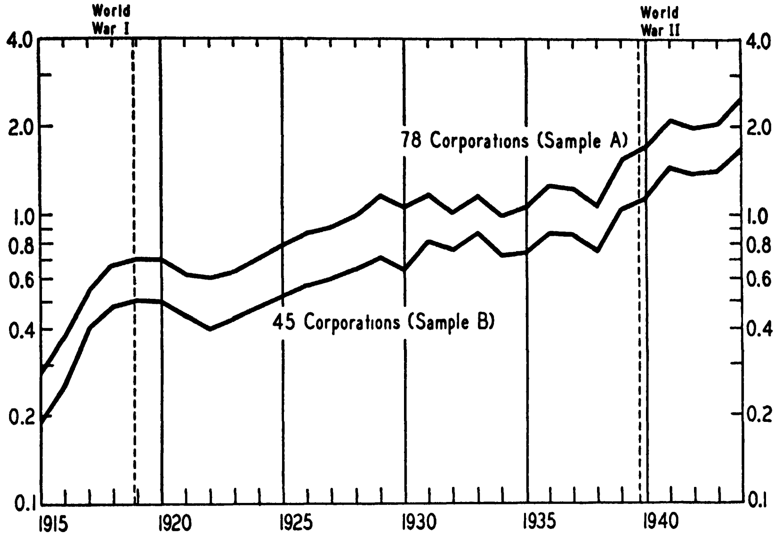
[7] See *Statistics of Income for 1934,* Part 2, p. 4; and J. F. Ebersole, S. S. Burr, and G. M. Peterson, "Income Forecasting by the Use of Statistics of Income Data," *Review of Economic Statistics,* Vol. XI (1929) pp. 171-96.

Chart 3—Indexes of Year-End Cash Balances of Manufacturing Corporations and of Total Means of Payment



Cash balances of our sample of large manufacturing corporations show a cyclical influence in the early thirties only in so far as their increase is retarded; balances of other groups of corporations decline. Growing importance in the economy of the large corporations in our sample is indicated by the steeper trend of their cash balances.

Chart 4—YEAR-END CASH BALANCES OF SAMPLES OF LARGE MANUFACTURING CORPORATIONS



large corporations of the sample is reflected by the more rapid rise of their sales. The 1937-39 average of the value of output of manufacturing industry as a whole was only 15.5 percent higher than the 1919-21 average, whereas the corresponding increase for the sales of our sample of 45 large manufacturing corporations was more than 53 percent. It is worth pointing out here that at the end of the interwar period cash balances of large manufacturing corporations were higher in relation to sales than at the beginning, a fact which will be considered later.

(2) The trend of the cash balances of *all* reporting manufacturing corporations is not much different from that of the total means of payment. This is, of course, simply another way of saying that the ratio of the cash balances of these corporations to the total means of payment is very stable.

It should be emphasized that the trend of the cash balances of all reporting manufacturing corporations shows a greater rise than that of the value of product of manufacturing industry as given by the census. Although the latter includes noncorporate enterprise, the bulk of the total output is produced by corporations. Therefore, the conclusion that manufacturing enterprises as a whole in the period 1926-39 show a tendency to increase their cash balances at a greater rate than their output seems justified.

(3) The horizontal trend of the cash balances of the sample of the medium and small corporations reflects the declining relative importance of these companies in the economy. For this group of corporations, also, the increase in cash balances during the period studied is greater than that for sales.

(4) The four curves show a marked dissimilarity, not only with respect to their trends but also with respect to their cyclical movements. The most striking difference is that the cash balances of our sample of large manufacturing corporations in the early thirties do not differ much from their predepression level, whereas the three other curves show a decline in the depression years, with the cash balances of medium and small corporations decreasing even more than those of all reporting companies.

SUMMARY

(1) The cash balances of the corporate universe follow the general cyclical pattern shown by the total means of payment.

(2) The ratio of cash balances of all corporations to the total means of payment is relatively stable through recession and upswing in the period from 1926 through 1936. No cyclical movement is discernible.

(3) Cash balances of all groups show a tendency to increase more rapidly than output (sales).

(4) Cash balances of different groups of corporations within the corporate universe show different movements. Their trends reflect the changing importance of the groups within the whole. Their cyclical movements vary widely. In particular, the large corporations of our sample in the early thirties show the influence of the recession only in so far as the increase in their cash balances is retarded. Cash balances of all reporting manufacturing and of medium and small corporations, on the other hand, show an absolute decline during the recession of the thirties.

Thus it is seen that the behavior of cash balances of different groups of corporations differs widely and it is necessary to keep in mind that the movement shown by the samples used in this study is not representative of the corporate universe; an explanation of this difference in behavior will be made in Chapter 5. The next three chapters, as well as Chapter 5, will be devoted to an analysis of the causes of the movements of cash balances of large and of medium and small corporations in the interwar period.

• 2 •

RELATION OF CASH BALANCES TO OTHER ASSETS IN THE BALANCE SHEET, 1919-39

FOR AN ANALYSIS OF CHANGES in corporate cash balances, two lines of approach suggest themselves. The first is to investigate the movements of cash balances in relation to the movements of other items in the balance sheet; the second, to relate cash balances to the work they have to do, i.e. to payments, and to investigate the movement of the ratio of cash to payments. This chapter will deal with the first of these two approaches. In the immediately following section, an a priori hypothesis about the movement of cash in relation to other items in the balance sheet will be developed, which will serve as a guide in the problem that is to be investigated and in the grouping and analysis of the statistical material.

FACTORS INFLUENCING CHANGES IN CORPORATE CASH BALANCES IN RELATION TO OTHER ASSETS

Although the ratios of the various assets to total assets of a company are partly determined by the technical nature of the process of production, experience shows that they are not stable over time but vary within wide limits. The ratio of cash to total assets is no exception to this rule. Under what circumstances can a rise (fall) of this ratio be expected?

Period of Business Contraction

In a period of business contraction, a company is faced with a declining demand for and therefore declining sales of its products. The fall in sales leads automatically to a decline in receivables. Inventories also decline since it does not pay,[1] nor is it necessary, to hold the same amount of inventories as in the preceding boom. Furthermore, replacements of fixed equipment may be postponed. There will therefore be a shift out of these three assets, which may be called "operating assets." Such a shift will, at first, swell the liquid funds of the company[2] (cash and marketable securities), but it is by no means certain that this increase will be lasting.

---

[1] Toward the end of the contraction period lower prices may lead to inventory purchases.

The funds obtained by the partial liquidation of operating assets may be paid out of the business in various ways, which results in a reduction in total funds employed (equity, adjusted for write-ups and write-downs, plus debt[3]). First, if losses occur they will absorb some of the funds released.[4] Second, the corporation may consider it a prudent long-run policy to pay out dividends even if they are not currently earned. Third, in order to save interest a company will try to reduce liabilities.[5] Trade payables decline automatically with a decline in inventory purchases. These transactions may absorb not only the cash released by the liquidation of operating assets (and, possibly, marketable securities) but also part of the cash which was, at the end of the preceding expansion, held for the purpose of carrying on operations. Since operating activities decline in contraction periods, a smaller amount of cash is needed for this purpose; the part of the cash balance thus freed can be used (in addition to the cash which comes in via the liquidation of operating assets) to reduce the total volume of funds employed.

This short discussion indicates that in periods of business contraction two developments are possible:

(1) In the extreme case all of the cash released by the shift out of operating assets (and possibly through the sale of marketable securities) plus part of the cash held in the preceding expansion to carry on transactions may be paid out of the company;[6] thus

---

[2] The postponement of replacements contributes to an influx of cash in so far as it signifies that depreciation allowances, which were not spent on replacements, have accrued.

[3] This sum is identical with the adjusted sum of the balance-sheet items.

[4] Losses can be considered as leading to an outflow of funds, even if they are less than the depreciation allowances, provided the decline of fixed property caused by the postponement of replacements is considered as leading to an influx of funds (see footnote 2).

[5] They may be forced to do so because banks call in their loans. In this case, the liquidation of operating assets, particularly inventories, may be the result, rather than the cause, of the reduction of liabilities.

[6] Some of the assets in the balance sheet, of which the most important are "permanent investments," are neglected here. They may release or absorb cash in a depression. The cash available for the reduction of equity and debt (total funds employed) is less or more than that indicated in the text, according to whether these other assets absorb or release cash during the period of business contraction.

total funds employed will be reduced. In this case a decline will occur in the absolute amount of the cash balance, although the ratio of cash to total assets may or may not decline materially. This development is likely if a company is under severe pressure either because of losses or because its debts become due or are called.

(2) The reduction in the total volume of funds employed may be less than the sum of the cash released by operating assets and that part of the cash balance which is set free by the decline in the volume of transactions. Under these conditions the ratio of liquid funds (cash and marketable securities) to total assets will increase. Whether the ratio of cash alone to total assets will rise depends on the current yield of securities and the expectations as to future security prices. If the yields are low and prices are expected to fall, the ratio of cash to total assets will increase, since the company will prefer to keep a larger part of its liquid funds in the form of cash. Such a rise in the ratio of cash to total assets indicates a *relative* shift into cash; it does not necessarily imply that the absolute volume of the cash balance has increased. An increase in the absolute volume would be the case only if the reduction in the total volume of funds were less than the absolute amount of cash released by the liquidation of operating assets (and, possibly, marketable securities).

The case in which the ratio of cash to total assets, and possibly also the absolute volume of cash, increases is most likely to occur if a company has not incurred heavy losses and has not been dependent on debt, especially short-term debt to banks, in the preceding boom, so that the reduction in liabilities cannot absorb cash.[7]

Period of Business Expansion

In periods of business expansion, the situation is the reverse of that in periods of contraction. When business expands, increased sales will cause a rise in operating assets which require cash for financing. Here, also, two cases can be distinguished, corresponding to the two cases discussed for a period of business contraction.

(1) If in the preceding period of contraction a company found itself in the situation where its cash did not exceed the minimum

---

[7] A more detailed discussion of the role of bank credit and also long-term credit in the accumulation of cash is found in Chapter 5.

required for carrying on transactions (case 1 described above), it is clear that the cash absorbed by an increase in operating assets must be acquired either by raising funds from outside or by the retention of profits (or the sale of marketable securities). No decrease in cash or in the ratio of cash to total assets will result from business expansion. On the contrary, since the volume of transactions rises, more cash will be required to carry on operations. The cash balance will increase in absolute terms and possibly also in relation to other assets — particularly if the latter were uncomfortably low during the recession. The additional cash required will be financed in the same way as the increase of operating assets (i.e., by new funds raised from outside or by the retention of earnings or by the sale of marketable securities).

(2) If the expansion starts from a situation in which the ratio of cash to assets was unusually high (case 2 above), the company may possibly finance the increase in operating assets at first by drawing on its surplus cash; in this case a decline in the absolute amount of cash, as well as in the ratio of cash to total assets, will occur. In later stages of the expansion, additions to the cash balance may again become necessary because of the increase in the volume of transactions. Under these circumstances, the absolute amount of the cash balance will expand, whereas the ratio of cash to total assets may remain approximately stable.

Later in this chapter the cash balances of large and of small and medium-sized manufacturing corporations for the period between the two wars will be examined, with a view to finding out which of these possibilities materialized and why. But before such analysis is begun, it is necessary to discuss briefly the method used in the investigation.

METHOD OF INVESTIGATION

The method of analysis followed in the next section is generally known as the "sources and uses of funds" analysis. A detailed description of this method cannot be presented here, but a few illustrations will serve to give an idea of the procedure that underlies the statistical analysis.

The larger part of the receipts of a company run through the enterprise and become expenditures during the same accounting period, affecting the balance sheet only in so far as profits are made on the transactions and are not paid out in the form of dividends or as losses are incurred. In the case of profits, only the increase in surplus and capital reserves is counted as a source of funds, leading to a net inflow of cash during the period.[8] The increase in surplus and capital reserves is not necessarily reflected in an increase of cash on the asset side at the year end; it may find its counterpart in an increase in inventories or fixed equipment or other items on the asset side, which then has to be considered as a use of funds leading to an outflow of cash during the accounting period. The reverse applies if losses are made on the transactions. Such current transactions, however, are not the only causes of net inflows or outflows of cash.

A company may increase its funds by borrowing or by floating stock, in which case the additional debt or stock has to be regarded as leading to an inflow of cash; and a corresponding increase in noncash items has to be regarded as leading to an outflow of funds. Again the reverse applies if debts are reduced. Profits (losses) and increases (decreases) in funds from outside involve an increase (decrease) in total funds employed (equity, adjusted for write-ups and write-downs, plus debt).

In addition, there are transactions that affect balance sheet items without changing the total of funds employed; they simply result in a shift between assets or between liabilities. Thus a decline in inventories means an inflow of cash which may be used to purchase marketable securities. The increase in the latter has then to be considered as a use of funds, involving a cash outflow. Or fixed equipment may not have been replaced fully during the accounting period. The decline is then to be considered as a source of funds, because it means that depreciation accruals are not fully spent on replacements.

It is, of course, necessary to adjust the fixed property account (as well as inventories and other assets) for write-ups and write-downs which may have been made during the accounting period, if correct results are to be obtained. Otherwise, a decline in the fixed property account, which is due to write-downs, would appear as a source of funds (and vice versa), whereas actually there was no inflow (or outflow) of cash. Such elimination of write-ups or write-downs requires corresponding surplus and reserve adjustments on the liability side of the balance sheet.

---

[8] Total receipts and payments are discussed in the following chapter.

Changes in the cash balance must be equal to the difference between the sum of all changes of balance sheet items that lead to an inflow and the sum of all changes that lead to an outflow of cash. A list of such changes follows.

(A) An *increase* in the following balance sheet items must lead to an *inflow* of cash at one time or another during the accounting period:

Funds from outside	Notes payable Accounts payable Tax accruals Other current liabilities Long-term liabilities Preferred and common stock Other liabilities
Funds from operations	Surplus and reserve accounts (after adjustments for write-ups and write-downs have been made)

(B) An *increase* in the following items in the balance sheet will cause an *outflow* of cash:

Marketable securities
Receivables
Inventories
Fixed property (An increase in fixed property is identical with fixed property expenditures minus depreciation and depletion charges. Adjustments for write-ups and write-downs have to be made.)
Investments and advances
"Other" assets (deferred charges, patents, etc.)

The difference between (A) and (B) will equal the increase or decrease of cash. *It must be emphasized that the items listed as leading to an inflow of cash (sources of funds) become items leading to an outflow of cash (uses of funds) if they have negative signs, and vice versa.* By this token the repayment of debt is a use of funds and a decrease in inventories a source of funds.

In the statistical analysis, the items listed above are combined into the following five groups, in order to reduce the material to manageable proportions:

(1) The total increase or decrease of "operating assets" (receivables, inventories, and net fixed property).[9] This summary of items for our sample of large manufacturing corporations is shown in panel 1 of Chart 5.

(2) The increase or decrease in total funds employed,[10] i.e., the sum of the items listed above under (A). The changes in total funds employed are presented in Chart 6.

(3) Changes in marketables securities (panel 3 of Chart 5).

(4) Changes in cash (panel 4 of Chart 5).

(5) A residual item "other" assets (panel 2 of Chart 5).

These groups are suggested by the preliminary discussion above. They indicate, when operating assets release cash, whether the cash released was paid out — which would be reflected by a decrease in total funds employed — or whether the cash went to swell marketable securities or the cash balance. When operating assets absorb cash, the groupings show whether the cash was provided by an increase in total funds employed (either through retention of earnings or increase of liabilities) or by a decline in marketable securities or cash.[11]

STATISTICAL ANALYSIS

Large Manufacturing Corporations

In years of severe business contraction[12] the large manufacturing corporations in our sample shift out of operating assets (panel 1 of Chart 5); the sum total of operating assets invariably releases cash in such years. As shown by the chart in Appendix B, receivables and inventory fall as business activity declines, while

---

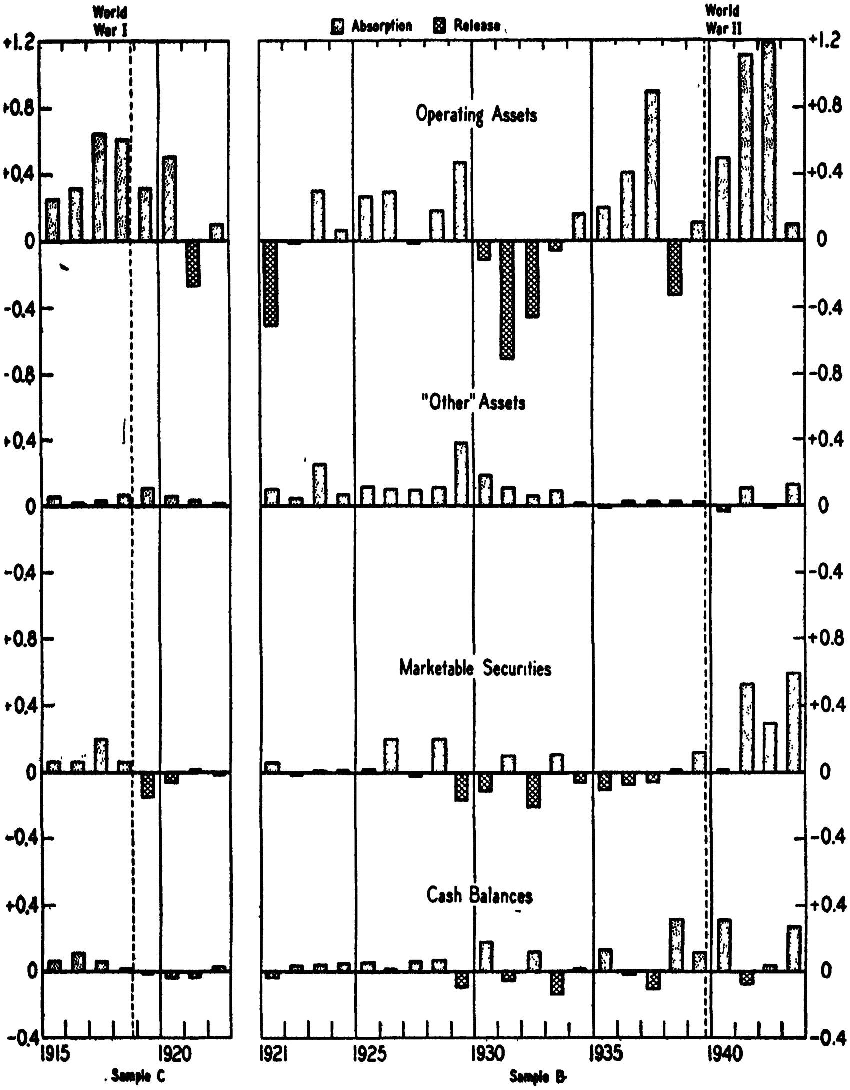
[9] Since the movements of each of the three components of this total are interesting in themselves, they are shown separately in Appendix B.

[10] A decline in the total volume of funds can be due to a reduction of liabilities or a decline in surplus accounts. The latter may result from actual losses or from dividend payments being greater than net income before dividends. The reverse applies in the case of an increase of total funds. A chart showing the separate movements in dividend payments, net income before dividends, and changes in funds from outside for large manufacturing corporations is given in Appendix B.

[11] As to the item "other" assets, see footnote 6 above.

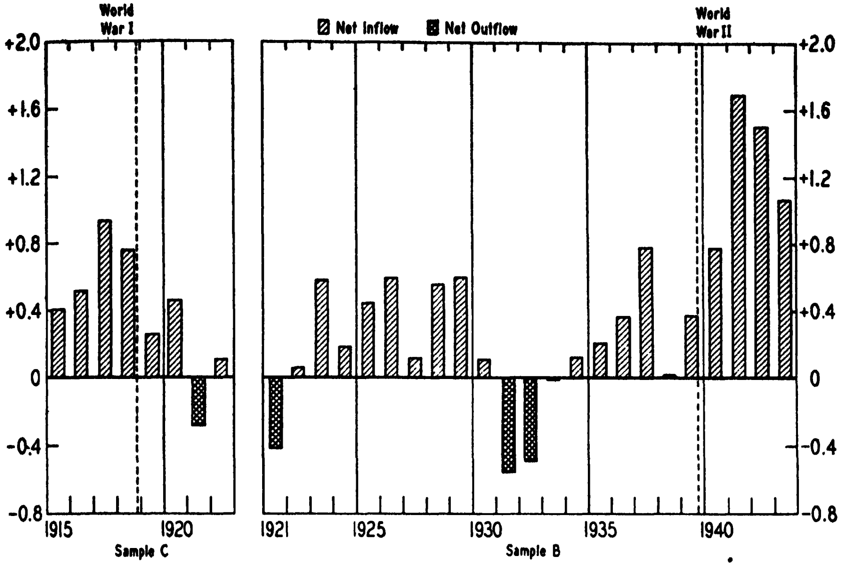
[12] 1921, 1930-33, and 1938.

Chart 5—NET ABSORPTION OR RELEASE OF FUNDS, BY MAJOR ASSET CLASSES, OF SAMPLES OF LARGE MANUFACTURING CORPORATIONS



Large manufacturing corporations shift out of their operating assets in times of business contraction, thus releasing funds in those years. The opposite process is at work during periods of business expansion.

Chart 6—Net Change of Total Funds of Samples of Large Manufacturing Corporations



As a rule there is a net inflow of corporate funds in years of business expansion and a net outflow in years of contraction.

fixed property, if it contracts at all, contracts with, roughly, a lag of one year, and the decline may occur after revival has set in.[18]

In the years 1921 and 1931-33, the bulk of the cash released by the liquidation of operating assets was paid out, resulting in a reduction in total funds employed. (See Chart 5, panel 1, and Chart 6.) A small part of the decline in 1932 came from actual losses on operations, but most of it was due to the fact that the corporations paid out dividends that were not earned during the year and, in addition, reduced their funds from outside (see Appendix B). The reduction of the last item, in so far as it represented a decline in accounts payable and tax liabilities, was

[18] In the year of minor recession, 1927, the decline of operating assets is so small that it can be neglected as a source of funds. The slight business contraction of the year 1924 shows itself only in a retardation of the increase of operating assets. It must be emphasized that our figures show changes from one year end to another; quite possibly during part of the year 1924 inventories increased although they were, at the end of the year, lower than at the end of the preceding year.

a relatively automatic consequence of the decline in the volume of business.

In two years of contraction (1930 and 1938) total funds employed *increased* in spite of the simultaneous liquidation of operating assets. Investigation shows that this increase was due to the floating of common stock (1930) and the incurring of long-term debt (1938), which more than offset the simultaneous reduction of current liabilities. The most obvious explanation is that in the preceding years arrangements for long-term financing had been made, which the corporations did not cancel.

The next point to be examined is whether the release of cash by operating assets led to a *relative* shift, in the composition of assets, in favor of cash at the same time that total funds employed showed a net decline. A positive (or negative) difference between the cash released by the decline of operating assets and the cash paid out is not identical with a net addition to (or subtraction from) the cash balance.

Chart 5 shows that in all recession years "other" assets, mainly permanent investments, increased, thus absorbing funds. At the same time, marketable securities absorbed funds in some of the recession years and released funds in others. The net result of all these movements was a drain on cash in 1921, 1931, and 1933, and an increase in cash in the years 1930, 1932, and 1938. In the last three years, there was a definite shift into cash in absolute terms.

The absolute increase in cash does not measure the *relative* shift among the assets into cash. Such a measurement is obtained by use of the ratio of cash to total assets, which is found to be higher in years of severe recession (except 1921) than it is in the preceding expansion years. For our sample of large manufacturing corporations, the average percentage of cash to total assets in the twenties (1922-29) was 5.6. In the recession years 1930-33 the ratio rose to an average of 7.0 percent, the figure for each year in this period being higher than that of any year between 1922 and 1929. In the depression year of 1938 the ratio advanced to 9.1 percent, from 6.3 percent in 1937.

Thus in severe recession years there is, as a rule, not only a partial liquidation of operating assets and a reduction in total funds employed but also a tendency toward a relative shift into cash as reflected by a rising ratio of cash to total assets.[14] Therefore, on the whole, the second case considered in the discussion of periods of business contraction above (page 19) is the one that applies to large manufacturing corporations.

The year 1921 is an exception, however. The reason for this exception is not difficult to discover. In that year large manufacturing corporations which had relied upon banks for financing inventory in the preceding boom were pressed for the repayment of loans. This situation may be contrasted with that in 1929; when the recession began in the latter year, big industrial corporations were largely independent of the banks, and funds set free did not have to be used for the retirement of bank loans.

During years of business expansion the process at work is the opposite of that in periods of contraction. The operating assets of large manufacturing corporations absorb funds. The additional funds are provided mainly out of retained profits, although in most years there is also an increase in funds from outside. Part of this inflow is again the automatic result of the increase in the volume of business. The net increase in total funds employed in the twenties was actually greater than the amount of funds absorbed by the increase in operating assets. The difference went for the most part into the building up of investments, marketable securities, and cash balances, additions to which were required to finance the increased volume of transactions. Between 1934 and 1937, however, the corporations financed their additions to operating assets and investments also by drawing on either cash or marketable securities. The fact that the ratio of cash to total assets declined in both 1936 and 1937 shows clearly a relative shift away from cash into operating assets.[15] Obviously, in this period of upswing the second case considered above in the discussion of periods of business expansion (page 20) is the one that applies to large manufacturing corporations.

---

[14] The ratio of marketable securities plus cash to total assets also shows a sudden rise in the recession of 1938 (from 8.7 percent in 1937 to 11.6 percent in 1938). However, the depression years, 1930-33, do not show a rise compared with the average of the years 1926-29. This can probably be traced to the attractiveness of investments in securities in the later years of the boom of the twenties because of the capital gain which could be made.

[15] In 1934 and 1935 the ratio of cash to total assets rose, in spite of the improvement of business conditions in those years. This rise, however, was accompanied by a decline in the ratio of marketable securities to total assets.

Just as the year 1921, in contrast to later periods of business contraction, did not show a rise in the ratio of cash to total assets, so the years after 1921, unlike other periods of business expansion, did not show a decline in the ratio. The reason is obvious. Since the corporations did not hold an abnormally large percentage of their assets in the form of cash in the depression of 1921, there could not be any shift "back" into operating assets, once business began to improve. In absolute terms cash actually showed an increase, which was required by the rising volume of transactions.

Medium-Sized and Small Manufacturing Corporations

For the sample of medium-sized and small corporations, also, the severe recession years show a liquidation of operating assets.[16] The funds thereby obtained are paid out of the business, which results in a decline of the total volume of funds employed. The decline during the years 1930-35 is explained in part by the negative rate of profit for the concerns in the sample, and in part by the reduction of debt. The extent to which repayment of bank debt accounts for the reduction cannot be established, since the balance sheets give only the sum of accounts payable and notes payable; the sum of these two items decreased sharply.

In contrast to the large corporations, the medium-sized and small companies do not show any relative movement into cash even in the depression of the thirties. On the contrary, the ratio of cash to total assets in most depression years, including 1921, was smaller than it was in the preceding boom. The explanation is that a drain on cash arose because of dividend payments and large losses, and also, in all probability, from the reduction of bank debt, which took place either because the corporations deliberately repaid their loans in order to save interest payments or because banks pressed them for repayment. Thus the first case considered above in the discussion of periods of contraction (page 18) is the one that applies to small and medium manufacturing corporations.

In expansion years the tendencies observed for medium and small corporations, as for large concerns, were opposite to those in years of contraction. The reason why the ratio of cash to total assets does not decline in all upswings no longer needs further explanation. Only if the upswing starts from a depression which shows an abnormally high ratio of cash to other assets can such a shift take place.

---

[16] The figures on which this discussion is based are given in Appendix D, Table D-3.

SUMMARY

(1) In severe recession years during the period 1919-39, large corporations shifted out of their operating assets by partial liquidation of inventory, receivables, and fixed property.

(2) Apart from covering losses, the funds thus released were as a rule largely paid out to stockholders or creditors.

(3) When the corporations were not indebted to any considerable extent, a strengthening of the cash balance relative to other assets occurred in times of contraction. When they were so indebted, the percentage of cash to total assets did not change appreciably.

(4) In expansion years, a *relative* shift away from cash into operating assets occurred only if the upswing started from a depression in which the corporations held an abnormally high percentage of their assets in the form of cash.

(5) For medium-sized and small corporations, the ratio of cash to total assets showed no increase in a depression (and therefore no decrease in a boom), the reason being that losses and the reduction of liabilities absorbed all the funds released by the liquidation of operating assets.

• 3 •

RELATION OF CASH BALANCES TO TOTAL RECEIPTS AND EXPENDITURES, 1919-39

IN THE PRECEDING CHAPTER, when use was made of the sources and uses of funds analysis, only those receipts and expenditures which leave their trace in the balance sheet were considered. The present chapter is intended to supplement the analysis of Chapter 2 by taking into consideration the *whole* flow of receipts and disbursements and their major components. By this procedure the importance of changes in the cash balance, in relation to total receipts or disbursements and to their components, can be investigated.

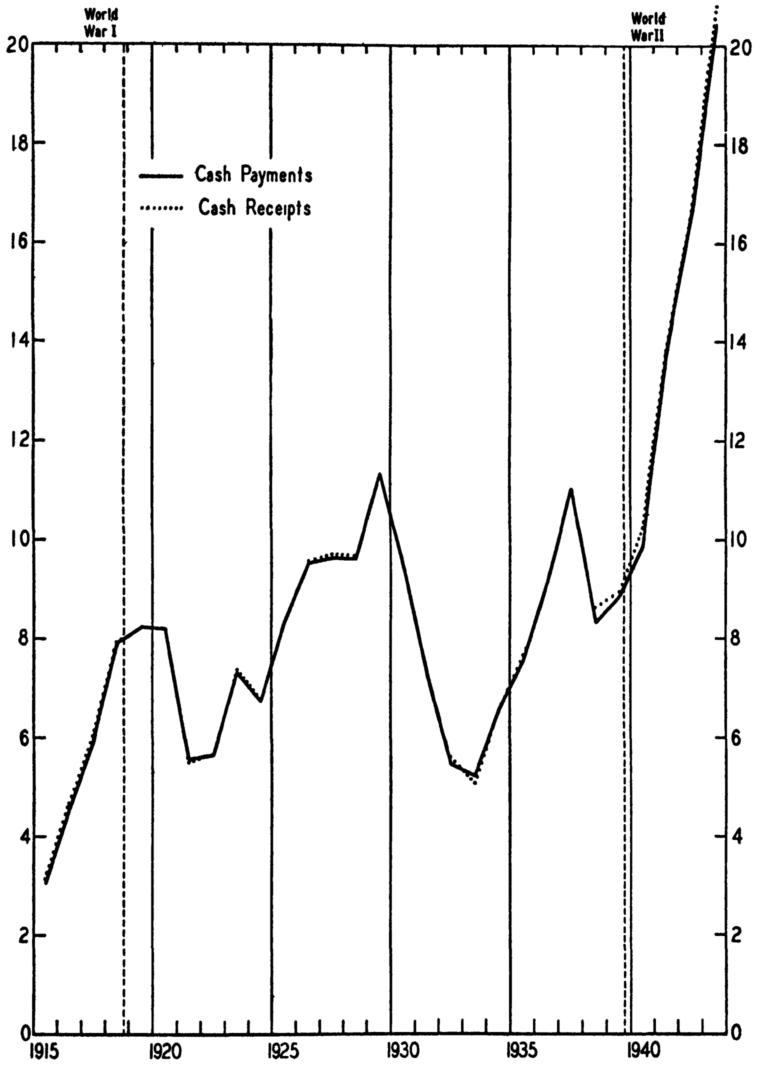
Chart 7 presents estimates of total cash receipts and payments, annually, for our sample of large manufacturing corporations.[1] The differences between the two series are identical with increases or decreases in the cash balance. Compared with changes in either total receipts or payments, changes in the cash balance of our sample are insignificant. In the years in which part of the expenditures was financed by drawing on the cash balance, the decline of the cash balance never amounted to more than 2.7 percent (1933) of total payments; this contribution by the cash balance to the financing of total expenditures was small indeed. In the years in which receipts were greater than payments, that part of receipts which was absorbed by an increase of the cash balance never amounted to more than 3.6 percent (1938). In other words, almost all payments are financed by receipts which come in during the same year, or if receipts are greater than payments almost all receipts during the year are used in that same year to finance expenditures. Apparently, the cash balance contributes little to payments nor does it ever absorb much of the receipts.

Chart 8 shows cash receipts split up into receipts from sales and "other" receipts, and cash payments split up into operating

---

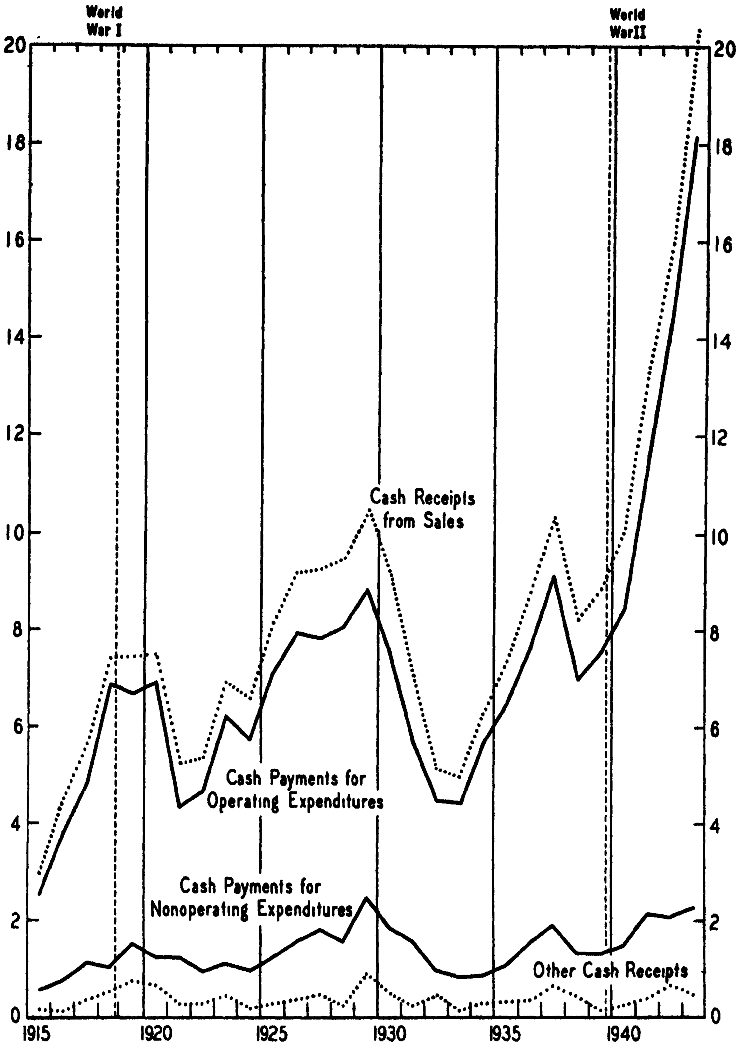
[1] For a detailed account of the method of estimating receipts and payments see Appendix C.

Chart 7—TOTAL CASH PAYMENTS AND TOTAL CASH RECEIPTS OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



On the whole payments of large manufacturing corporations are financed by receipts during the year; the cash balance contributes little to payments and never absorbs much of the receipts.

Chart 8—MAJOR COMPONENTS OF CASH RECEIPTS AND CASH PAYMENTS OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



There is always a net contribution to the cash balance on current account and a drain on the cash balance on noncurrent account for large manufacturing corporations.

expenditures and nonoperating expenditures. Other receipts are mainly receipts obtained through the issue of stocks and bonds and through borrowing from the banks,[2] and can be identified with funds from outside the corporations. It must be emphasized that they represent an inflow of funds without any deductions for an outflow which may occur over the accounting period through repayment of debts.[3] Nonoperating expenditures represent mainly dividend payments and outlays on fixed property, both of which are of approximately equal quantitative importance. Operating expenditures are identical with total payments minus nonoperating expenditures. In the interwar period, other receipts never amounted to more than 9.4 percent of total receipts (1919), and they fell as low as 1.1 percent (1939); nonoperating expenditures never exceeded 22.0 percent of total payments (1921) and never fell below 13.5 percent (1934).

As is to be expected, current receipts (receipts from sales) are always larger than current expenditures (operating expenditures), and therefore there is always a positive contribution to the cash balance on current account. This contribution increased in the expansion of the twenties (from 1923 onward), declined in the contraction years of the early thirties, and rose again after 1933. These changes are shown clearly by the top curve on Chart 9. The excess of current receipts over current expenditures appears to follow a cyclical pattern, rising in an expansion period and falling during a period of contraction. But there are exceptions to this rule. Each of the recession years 1921 and 1938, for instance, shows an increase, and the expansion year 1937 a decrease, in the excess of current receipts over current expenditures.

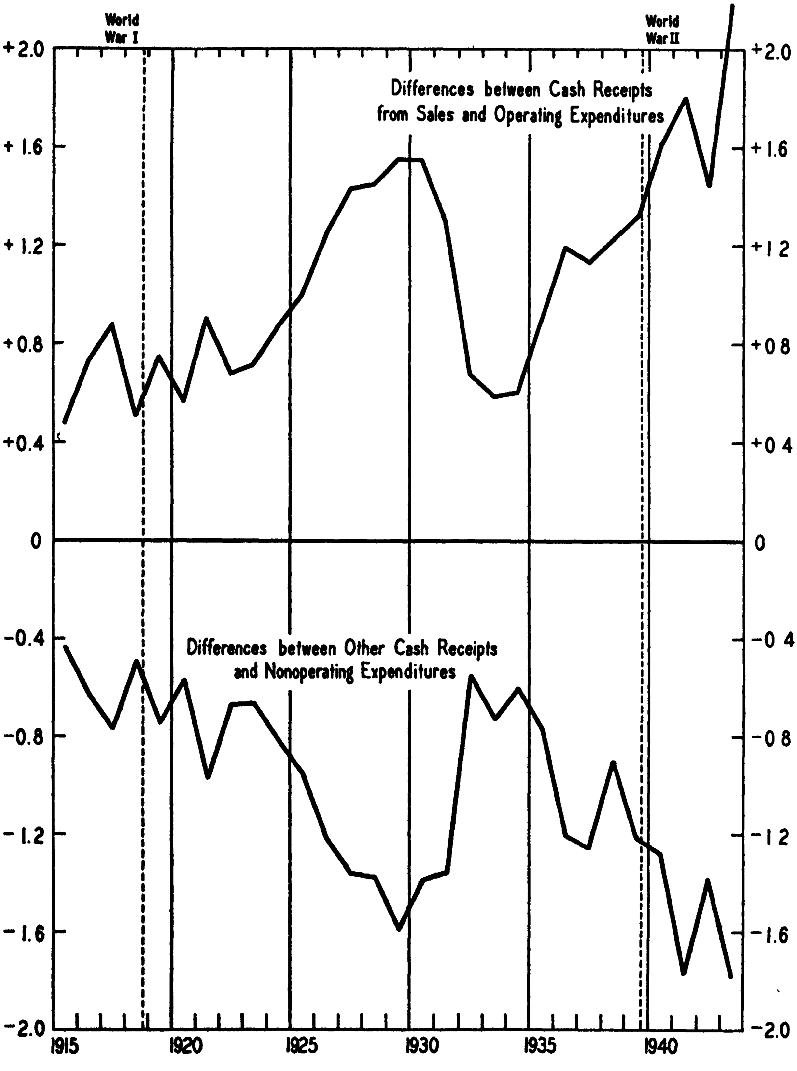
These exceptions to the general movement of the excess of current cash receipts over current cash disbursements can be traced mainly to the influence that changes in inventory may have on current receipts or disbursements. As a rule, business expansion raises current receipts more than current outlays, mainly because profits from sales rise; in a depression prices fall and losses occur, with the result that the excess of current receipts over current expenditures declines. However, it may happen that inventory increases abnormally in a year of expansion (as in 1937), raising

---

[2] See Appendix C.

[3] The net inflow of funds from outside is shown in Chart B-2, Appendix B.

Chart 9—DIFFERENCES BETWEEN MAJOR COMPONENTS OF CASH RECEIPTS AND CASH PAYMENTS OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



When the surplus of receipts from sales over operating expenditures rises, companies can finance a larger volume of their nonoperating expenditures from this surplus, and vice versa when the surplus declines.

current expenditures without increasing sales by a corresponding amount. As a result the excess of current receipts over current expenditures may decline in spite of the rise in profits on sales. Contrariwise, inventory in a year of recession may show a sharp decline (1921, 1938), in which case receipts from the sale of inventory are not matched by corresponding operating expenditures incurred for the purpose of replacing the inventory. The excess of current receipts over current expenditures will then rise in spite of the decrease in profits on sales which may occur simultaneously.

While receipts from sales consistently exceed current expenditures, other receipts are consistently smaller than nonoperating expenditures (Chart 8). On noncurrent account therefore there is always a *drain* on the cash balance. But as Chart 9 shows, the drain becomes greater (i.e., the deficit on noncurrent account increases) in those years (with the exception of 1934, 1937, and 1938) in which the surplus of receipts from sales over current expenditures rises. The opposite movement of the excess on current account and the deficit on noncurrent account is, of course, causally connected: When the surplus of receipts from sales over operating expenditures rises, the companies can finance a larger volume of their nonoperating expenditures from this surplus, and vice versa when the surplus declines.

The difference between the surplus of receipts from sales and operating expenditures on the one hand and the deficit between nonoperating expenditures and other receipts on the other is identical with an increase, or decrease, of the cash balance. These increases and decreases of the cash balance do not seem to follow any definite pattern. The data in the bottom panel of Chart 5 give the impression that the residual movements of the cash balance are simply accidental. This impression, however, is misleading. The discussion in the preceding chapter has shown that if we consider the movements of the cash balance in relation to the other items of the balance sheet, they fit into a definite pattern; and the next chapter will reveal that a clear pattern emerges also if we relate the cash holdings to payments, i.e., to the work which they have to perform.

For small and medium corporations the cash balances do not increase and decrease in the same years as the cash balances of large manufacturing corporations. Nevertheless, in all essential points the relation between cash balances and receipts and expenditures is the same for both groups of corporations.

SUMMARY

(1) In the period 1918 to 1939 cash receipts from sales were always greater than operating expenditures. There was, therefore, a net addition to the cash balance on current account; this addition itself underwent wide fluctuations.

(2) Nonoperating expenditures were always greater than noncurrent receipts, thus causing a drain on the cash balance. The difference between the two fluctuated widely.

(3) The bulk of the "deficit" on noncurrent account was financed by the surplus on current account. An increase or decrease of the cash balance represented only a negligible part of either total receipts or total payments.

• 4 •

CASH AND THE VOLUME OF TRANSACTIONS, 1919-39

As INDICATED IN CHAPTER 2, a second line of approach in an analysis of corporate cash balances is to relate cash balances to the work which they have to do, i.e., to payments. Before the movement of the ratio of cash to payments can be investigated, however, it is first necessary to consider the main factors determining the size of cash holdings.

CASH REQUIREMENTS AND CASH HOLDINGS

Manufacturing corporations hold cash balances primarily to provide for future payments, but it cannot be assumed a priori that the money held for this purpose is necessarily a fixed percentage of expected future payments. The determinants of the ratio are manifold, and it is possible that both they and the ratio may vary over a period of time. Five factors deserve particularly to be mentioned in this connection.

(1) *Coincidence of receipts and expenditures.* A company which has reason to expect that, in the near future, it will have to make cash payments that are not matched by an inflow of money will have to hold more cash than if it expects that receipts will come in at the same time that expenditures are being made. For instance, receipts from sales may be subject to seasonal fluctuations whereas production expenditures are not. It is clear then that during the months when sales are low the company needs a large cash balance on which to draw for its expenditures. The cash balance itself will show seasonal fluctuations; it will rise when sales increase and fall when they decrease. For this reason the ratio of average cash[1] to payments during any one unit period (such as a month) will increase when sales increase and fall when sales fall. Such a ratio is an index of the work the cash balance does. If the ratio rises,

---

[1] By "average cash" we mean the average of the cash balances which existed at successive moments of time during the unit period, e.g., the average of the cash balances at the end of every business day during a month.

it means that the cash is being turned over more slowly than before (that is, the velocity of circulation of the cash balance is decreasing), and vice versa.

In addition to current receipts and expenditures there are nonrecurrent receipts and disbursements. A company may, for instance, plan to add to its equipment. If it finances this addition out of profits (i.e., neither through outside funds nor through the sale of marketable securities or other assets), the cash balance will increase before the disbursement is made. Therefore, in the period before the accumulated funds are spent, the ratio of cash to payments will rise, whereas it will fall in the period when the disbursement takes place. The situation will be similar in the case of tax payments—in fact, in the case of all large concentrated disbursements.

If the lack of coincidence of receipts and expenditures were the only factor determining the size of cash balances, both cash balances and the ratio of cash to payments would fluctuate rather widely, because of seasonal and cyclical influences. However, such fluctuations are largely avoided if the company takes advantage of the existence of a credit market in one or the other of the forms described under (2) and (3) below.

(2) *Opportunities for investments.* Even if a concern expects large disbursements—for instance, on fixed property in the near future—it may not have to hold a particularly large cash balance if it can invest on short term the money required for this purpose. In the late twenties, when concerns could lend on call to members of the stock exchange at an attractive interest rate, they would have been foolish to hold funds in the form of actual cash even if these funds were to be needed shortly for plant expansion. Or, to take a different example, if a company is preparing to meet tax payments, it is not obliged to hold a large cash balance for this purpose if it has the alternative of investing in tax notes or other government securities. Through short-term investment, a company can also eliminate an increase in its cash balances which is due to seasonal influences.

If an enterprise has short-term debts (see 3 below) it may, of course, prefer to use a temporary surplus of cash for reduction of the debts rather than for investment.

(3) *Opportunities for borrowing.* A concern which has access

to credit need not hold the same amount of cash as a firm which finds it difficult to borrow. Seasonal expenditures do not require a previous accumulation of cash if the firm can finance them by bank credit. In addition, expenditures on equipment do not require a gradual accumulation of cash over an extended period if the concern can arrange the issue of securities shortly before the disbursements are to be made.

(4) *Uncertainty.* Cash is held for precautionary reasons to meet special contingencies that may affect the conduct of industrial operations, e.g., a strike that stops receipts while payments continue in substantial volume, or a sudden price decline that lowers receipts without lowering payments to the same extent. Furthermore, special buying opportunities may arise which can be taken advantage of only by cash purchases at the moment. In general it is true that the greater the feeling of uncertainty about the future, the greater the ratio of cash to payments. In this case, also, part of the liquid reserves held for special contingencies may be invested in marketable securities.

Thus the possibility of giving or taking credit tends to iron out fluctuations in the cash balance and in the ratio of cash to payments which would otherwise occur. Since either borrowing or lending has a stabilizing influence on cash balances, it is not unreasonable to expect that cash may comprise a fairly stable percentage of total payments, i.e., that the ratio of cash to total payments may remain relatively constant. However, as indicated under (5), there is a situation conceivable in which the ratio may rise considerably above the "normal" ratio, i.e., the ratio determined by the volume of transactions and the precautionary motive.

(5) *Unfavorable business prospects.* A company may find itself in a situation where it holds more cash than it considers necessary. Excess cash may accumulate if business conditions are such that investment in assets of the company does not pay; if, in addition, the company has no debts to pay back, and investment in marketable securities is unattractive because the yield is low or prices are expected to fall; and if, finally, the company is reluctant to pay out cash by way of dividends. Such a situation can occur only in a period of business contraction. In a period of business expansion, the company is not likely to hold more cash than is required for the transaction purpose and the precautionary motive.

STATISTICAL PROCEDURE

A correct measure of the relation of cash holdings to total payments would require that the average of daily cash balances during the year be related to total payments. The data available, however, permit calculation of only the ratio of the average of two year-end cash balance figures to estimated payments during the year. This measure has certain drawbacks, two of which may be mentioned specifically.

First, because of seasonal influences the year-end cash balances may be exceptionally high or exceptionally low, compared with the average for the year; this is true at least if it is assumed that a company does not or cannot make use of the opportunities for lending and borrowing. This deficiency is not of great importance in the present study, however, since interest is centered not so much on the absolute level of the ratio as on its movements over time.

Second, nonrecurrent expenditures made during the year, such as disbursements for fixed property, are included in our payments figures. Before such expenditures are made, the cash balance during some period within the year is likely to be higher than during the rest of the time, including the year end. In this case, the ratio of cash to payments as used in this study would be too low compared with a correctly calculated ratio. On the other hand, if the year end falls in a period when preparations for nonrecurrent expenditures are being made, the ratio may be too high. This deficiency cannot be overcome. Although, as shown in the preceding chapter, nonrecurrent expenditures may be separated from total payments, in order to show their importance in relation to total disbursements, cash balances cannot be divided correspondingly into two parts—one held to provide for operating expenditures, the other for nonrecurrent disbursements. The influence of this factor on our ratio of cash to payments will be less important, the more the companies take advantage of the credit market by lending and borrowing.

In our analysis the average ratio of cash to payments during the twenties (1922-29) is used as a sort of "normal" ratio, that is, a measurement of the amount of cash normally required for the transaction purpose. This use is justified on two grounds: first, because it is reasonable to assume that in this boom period the corporations did not hold "idle" cash, but made use of the credit market to invest any temporary surplus of cash which they might have possessed; second, because the ratio of cash to payments was remarkably stable during those years. With the aid of the "normal" ratio, the amount of cash which the corporations held in the thirties, over and above what was necessary for the transaction purpose, can be calculated: The payments figure for each year is multiplied by this "normal" ratio; the result obtained represents the "transaction" cash for each year. The difference between the transaction cash figure and the actual cash figure is called, for lack of a better name, "free" cash. This "free" cash then includes all cash held to provide against the uncertainty of the future (case 4 above) in so far as the amount of cash held for this purpose was greater in the thirties than in the twenties. A part or all of this "free" cash may therefore perform the important function of a reserve for unforeseen contingencies. In addition, "free" cash includes what might truly be called "excess" cash, i.e., cash which is held for the reason described under (5) in the preceding section.[2]

It is important to emphasize that "free" cash is not "idle" cash in the sense that it does not circulate at all. It is an estimate of the amount of cash which is not needed for the transaction purpose, based on the assumption that the ratio of cash to payments which prevailed on the average through the years 1922-29 indicates the volume of money in relation to payments which is required for the transaction purpose. If corporations adhered to a "normal" turnover ratio, they could dispose of an amount of money equal to the amount of "free" cash. The appearance of "free" cash indicates that the turnover of total cash of the companies is less than "normal."

It is, of course, possible that after a period in which cash holdings are large in relation to payments, corporations become accustomed to a high ratio of cash to payments, just as banks have become used to excess reserves. If so, our "free" cash includes a part which represents the additional margin that business now considers necessary.

---

[2] Mr. A. Kisselgoff of the Financial Research Staff of the National Bureau of Economic Research devised the methods of estimate used here and was in charge of their preparation. The author is indebted to Mr. Kisselgoff for ideas developed in the process.

Slight exaggerations in the movement of "free" cash from year to year may result from the method of calculation adopted, since the ratio of cash to payments which is required for the transaction purpose may vary because of the influences of nonrecurrent "bulky" payments. Therefore, for the purpose of drawing conclusions these minor fluctuations must be disregarded, and only the broad changes in the ratio taken into account.

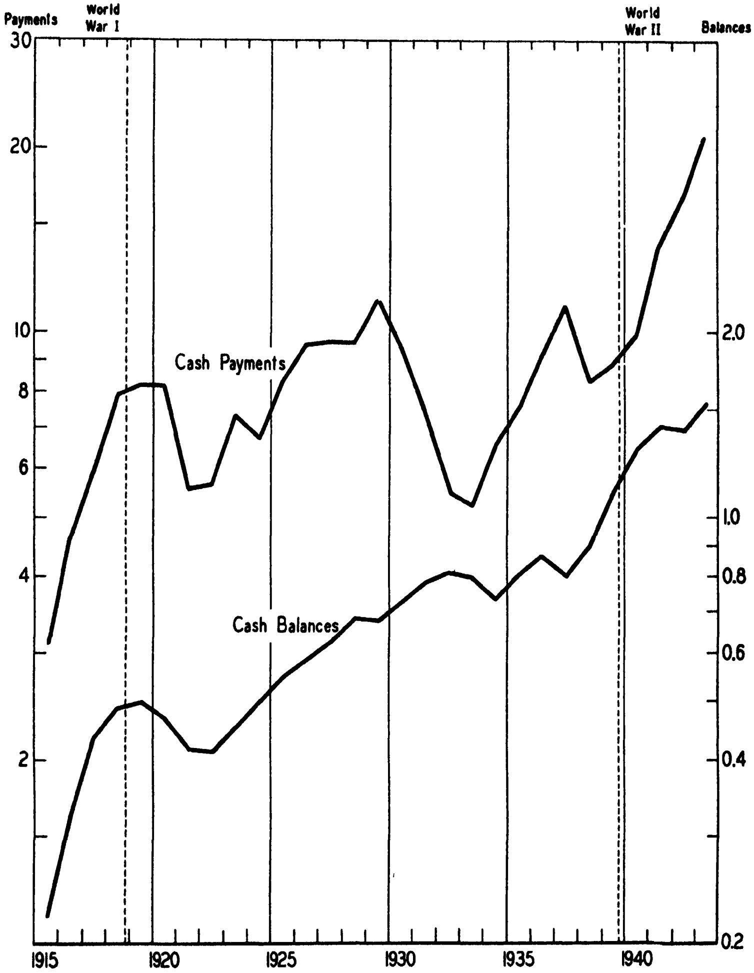
Among the "bulky" payments those for taxes deserve particular attention. If the assumption is made that a company holds 100 percent cash against its tax liabilities, it is clear that if tax liabilities increase the ratio of cash to payments will rise from year to year. In this case, therefore, it would seem to be more reasonable to exclude cash held against tax liabilities from our cash figure and tax payments from our payments figure. But for the period between the two wars, which is considered in this chapter, such exclusion is not possible since the balance sheets of the corporations, as a rule, do not show tax liabilities separately. Fortunately, they do not play a very important role in these years. Moreover, it should be remembered that the liquid funds which are held against tax liabilities may be in the form not of cash but of marketable securities. In a later discussion of developments during the present war period, special attention will be given to this point.

RELATION BETWEEN CASH BALANCES AND PAYMENTS

Cash balances (moving averages of year-end data for two successive years) and annual cash payments of our sample of large manufacturing corporations are presented in Chart 10. While cash payments follow a cyclical pattern, cash balances reflect the influence of business cycles less well. The minor recessions that occurred in the years 1924 and 1927 did not leave any imprint on the movement of cash balances and no cyclical movement is visible after 1929.

If average cash is expressed as a percentage of total payments, a rough index of the velocity of circulation of cash balances is obtained. When this index rises, it means that the velocity is declining, and vice versa. The upper curve in Chart 11 shows the movement of this ratio for large manufacturing corporations. In

Chart 10—ESTIMATED ANNUAL CASH PAYMENTS AND AVERAGE CASH BALANCES OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



In the depression of the early thirties average cash balances of large manufacturing corporations, unlike cash payments, rose somewhat above the level attained in the late twenties.

the twenties only minor fluctuations occur, indicating a relatively constant velocity of circulation. In the thirties, the ratio rises (velocity falls) sharply up to 1933, declines (velocity rises) during the period of business expansion until 1937, and rises (velocity falls) in the recession of 1938.[3]

Chart 12 separates cash balances into the two components, "transaction" and "free" cash, discussed in the preceding section. For reasons already indicated, minor fluctuations of "free" cash around the zero level are neglected. But the appearance of "free" cash after 1929, its fall from 1933 onward, and its rise after 1937 are unmistakable. "Free" cash in the thirties has a definite (inverse) cyclical pattern. It appears that the relative stability of the absolute level of cash balances of large manufacturing corporations over most of the thirties can be considered as consisting of a decrease in "transaction" cash counterbalanced by an increase in "free" cash, and vice versa.

The sample of medium-sized and small manufacturing companies reveals a somewhat different picture. First, as shown by Chart 11, the ratio of cash to payments is lower at all times for the medium and small corporations than for the large concerns. The explanation may be that the medium-sized and small companies are, on the whole, less profitable than the large concerns, and, therefore, that they are driven to holding smaller cash balances in relation to payments.[4]

Second, after 1920 the ratio shows a definite tendency to increase. Apparently, the experience of the depression which began in 1920 induced this group of corporations to shift to a more comfortable liquidity position, and higher profits enabled them to do so. Third, although the ratio rises sharply in the depression years 1931 and 1932, the rise is not so great as that of the corresponding ratio for large corporations.

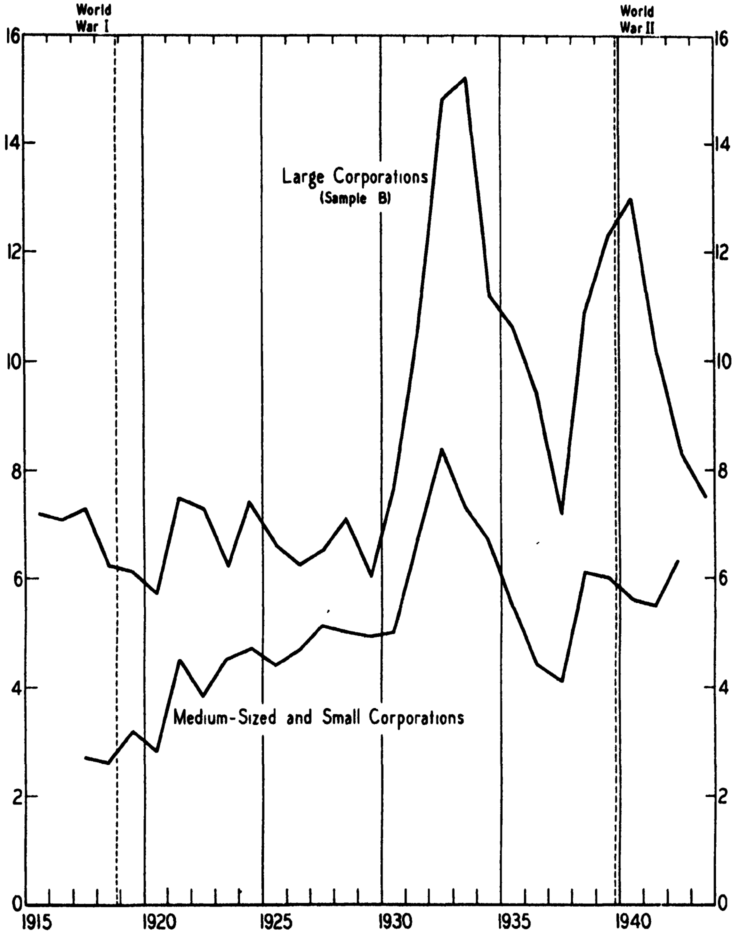
Changes in holdings of "free" cash by medium-sized and small corporations are much more difficult to interpret than are changes in "free" cash of large manufacturing corporations. All that can be ventured on the basis of Chart 13 is that in the early years of the period under consideration there appears to have been a short-

---

[3] The ratio of demand and time deposits to bank debits of commercial banks in 100 leading cities excluding New York shows between 1929 and 1938 the same movements as those of the ratio of cash balances of large manufacturing corporations to payments, i.e., a rise until 1933, a fall from then onward until 1937, and a rise again in 1938.

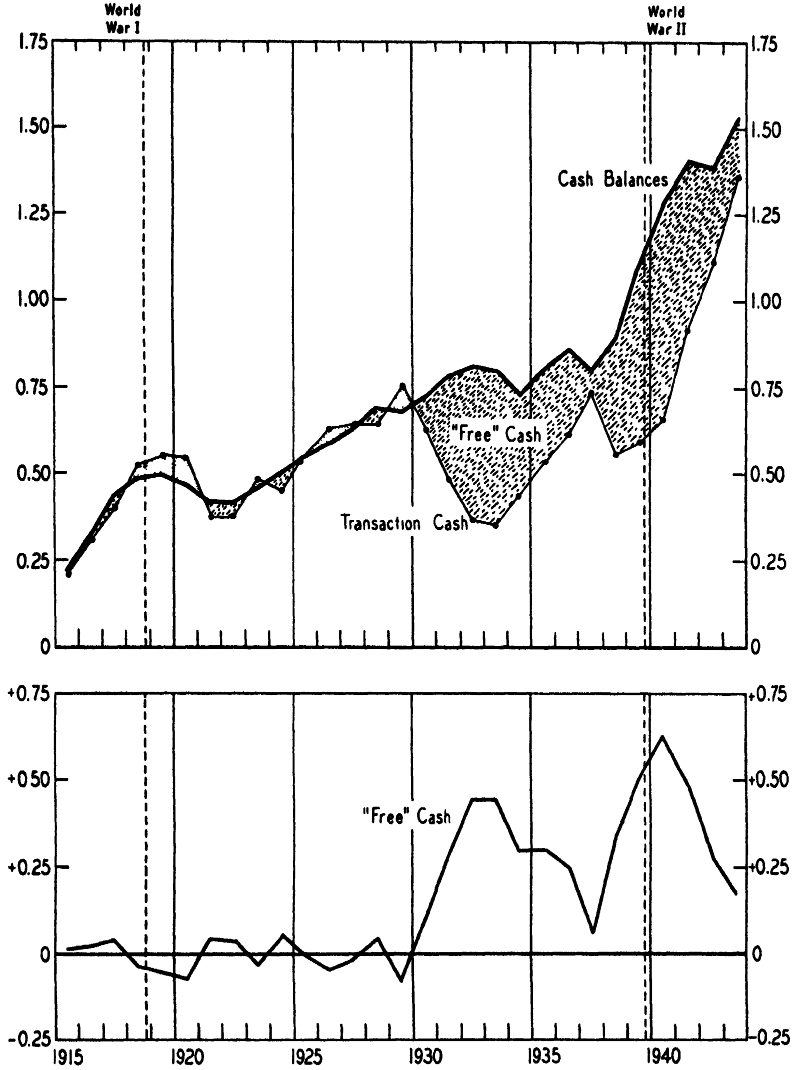
[4] How much cash to hold for the "precautionary motive," for instance, is subject to managerial discretion within rather wide limits.

Chart 11—Ratio of Average Cash Balances to Estimated Annual Cash Payments of Samples of Manufacturing Corporations



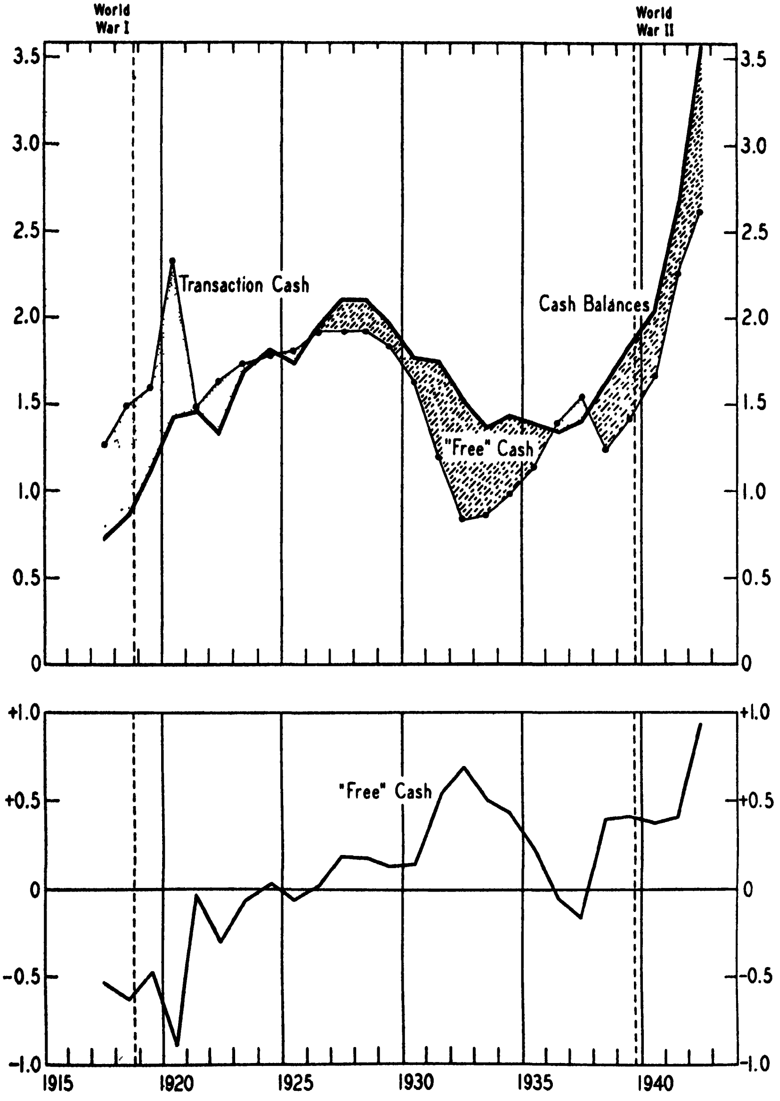
For large, and also for medium-sized and small, manufacturing corporations a relatively constant velocity of circulation of cash balances during most of the twenties is indicated by the minor fluctuations of the ratio of cash balances to payments; sharp changes in velocity occurred in the thirties.

Chart 12—AVERAGE CASH BALANCES, ESTIMATED TRANSACTION CASH, AND ESTIMATED "FREE" CASH OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



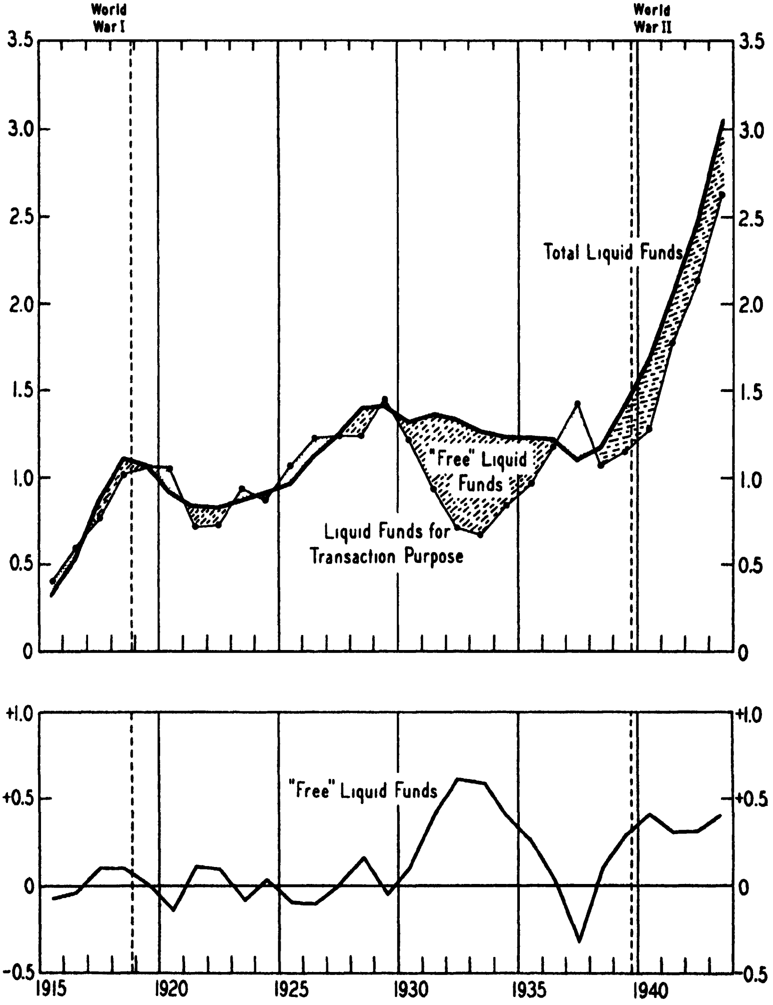
In the twenties transaction needs seem to have determined the level of cash balances of large manufacturing corporations; in the thirties "free" cash comprised a substantial part of the balances.

Chart 13—AVERAGE CASH BALANCES, ESTIMATED TRANSACTION CASH, AND ESTIMATED "FREE" CASH OF SAMPLE OF MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS



For medium-sized and small manufacturing corporations, "free" cash in relation to transaction cash in the thirties was not so great as in the case of large manufacturing corporations.

Chart 14—ESTIMATED TOTAL LIQUID FUNDS, LIQUID FUNDS FOR TRANSACTION PURPOSE, AND "FREE" LIQUID FUNDS OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



On the whole the movement of "free" liquid funds is similar to that of "free" cash for large manufacturing corporations. The main difference between the two series is that in 1937 there were no "free" liquid funds whereas there was a slight "surplus" of cash alone.

age of money, and that after the crisis of 1929 some "free" cash was held. But in the thirties the ratio of "free" cash to transaction cash was never so high as in the case of large corporations.

Corporation management considers marketable securities as part of liquid funds and, as far as their liquidity is concerned, just as good as cash. In order to complete the picture, "free" liquid funds (i.e., funds which are not necessary for the transaction purpose) of our sample of large manufacturing corporations are shown in Chart 14. The method of computation is the same as that for "free" money.[5] Between the two wars the movements of "free" liquid funds are similar to those of "free" cash. (Compare Charts 12 and 14.) The main difference between the two series is that the fluctuations of "free" liquid funds are not so wide as those of "free" cash, and that the year 1937 exhibits a "shortage" of liquid funds[6] whereas cash alone still shows a slight surplus compared with the average of the twenties. The movements during each of the two war periods will be analyzed later.

The reader must be warned against a careless interpretation of this second measure of liquidity. If all companies, or even an important number of them, should begin to liquidate their security portfolios at the same time, interest rates would rise and security prices fall. The securities then would not provide so much cash as their prices would indicate before the liquidation started. As far as an individual company is concerned, however, there is no objection to treating its marketable securities as equivalent to cash, since a partial liquidation of securities by one company is not likely to affect interest rates or security prices.

---

[5] That is, the average ratio of cash plus marketable securities to payments during 1922-29 is used as a basis for calculating "free" liquid funds.

[6] For reasons that are explained in Chapter 5, holdings of marketable securities in the late twenties appear to have been exceptionally high. Therefore, the average ratio of cash plus marketable securities to payments for 1922-29 is perhaps too high to be used as a base for calculating "free" liquid funds. The year-to-year movement of "free" liquid funds, however, is not affected by the use of this base; neither can the absolute level of "free" liquid funds be greatly distorted by it. But for the year 1937 the "shortage" of liquid funds revealed by this method of computation becomes doubtful.

SUMMARY

(1) In the twenties transaction needs appear to have determined the level of the cash balances of large manufacturing corporations, if year-to-year fluctuations are neglected. The increase in cash balances that took place in that period is primarily a reflection of the increase in payments.

(2) In the thirties a large part of the cash balances of large manufacturing corporations was "free" cash—an increasing part in recession and a decreasing part in expansion.

(3) For medium-sized and small manufacturing corporations, "free" cash increased after 1929, but in relation to transaction cash it was not so great as in the case of large manufacturing corporations.

• 5 •

ANALYSIS OF "FREE" CASH

THE CHANGES IN "FREE" CASH accumulated by large manufacturing corporations during the thirties, which were discussed in the preceding chapter, may be explained by a variety of factors. One of the most important of these factors—particularly in an analysis of changes in the thirties compared with those in the twenties—is the role of bank debts. Other factors that must be considered, however, include profits, holdings of marketable securities, and dividend payments.

THE ROLE OF BANK DEBTS

There are two reasons for paying particular attention to bank debts among the liabilities of a company, in connection with the analysis of "free" cash.

First, bank debts can be reduced with great ease at the borrower's initiative, which makes it improbable that they will exist simultaneously with large amounts of "free" cash. This is not true to the same extent of other types of liabilities. The use of accounts payable is a well established trade custom; companies do not change over to cash payments for the sole reason that they have "free" cash on their hands. As for tax liabilities, they rise and fall automatically with net income, provided that tax rates do not change. Long-term bonds, it is true, can be retired at the initiative of the company; they can either be called back, if they are callable, or repurchased in the open market. If a corporation expects to need funds again, it will call bonds only if a new issue can be floated at a lower interest rate, with due consideration being given to the costs of flotation. The new issue would simply replace the old one and no retirement of debts would take place. Only if the company is not in need of funds would the calling in of bonds lead to a reduction of "free" cash; in this case the existence of "free" cash may be the reason why the bonds were called at the particular time. The *repurchase* of bonds in the open market pays only if the market price is below the book value of the bonds. Consequently, there is no reason to expect companies to retire their bonds in this fashion merely because they have temporarily "free" cash. Of course, the existence of "free" cash may possibly coincide with low bond prices; a repurchase of bonds may then take place, decreasing the amount of idle cash held by corporations. But in this case the decisive factor for the repurchase of the debt is the low level of bond prices and not the existence of "free" cash.[1]

Second, if a company or a group of companies pays off any type of liability other than bank debt, cash balances are merely transferred and no net decline occurs in cash balances in the economy as a whole. But if bank debt is repaid, a reduction of cash balances will result unless the banking system replaces bank loans by other types of assets. This point is of great importance if any attempt is made to generalize the conclusions that are reached in our analysis.

During the decade of the twenties, bank credit was of little importance for large manufacturing corporations; bank debt, measured by notes payable, was reduced sharply throughout that period. In 1929, the year before "free" cash began to accumulate, 27 companies out of our sample of 45 large manufacturing corporations had no notes payable. Therefore, when these concerns became liquid the paying off of bank debt did not provide an outlet for their excess funds. Total notes payable of the other 18 companies in 1929 amounted to 2.6 percent of their combined total assets. By 1931, the payables of 8 of these companies had been reduced to zero, and those of the remaining 10, to 0.7 percent. By 1931 the absolute amount of notes payable for the entire group of corporations had declined to 21 percent of the 1929 level. Thus the great liquidity which corporations built up after 1929 was accompanied by an almost complete disappearance of bank debt.

That bank debt as measured by notes payable does not disappear entirely, in spite of the accumulation of "free" cash, can be ascribed primarily to two circumstances. First, notes payable do not include only notes payable to banks, although the latter do constitute the bulk of the total.[2] It is possible that the relative decrease of bank debt after 1929 may have been even greater than the movement of the total of notes payable would lead us to expect. Second, our figure for "free" cash relates to the *aggregate* of the 45 companies. Some of the companies within this group may not have had "free" cash and, consequently, may have been unable to reduce their bank debt to zero. These considerations must be kept in mind particularly for the years after 1932 when notes payable started to increase although there was still "free" cash in existence. Those companies increasing their bank debt may not have been the same as those that still had sufficient cash for expansion of inventories. Indeed, a detailed examination of the individual companies shows that cash was unequally distributed among them.

---

[1] The long-term debt of our sample of large manufacturing corporations was actually reduced during the period 1933-36.

[2] For an estimate of the percentage of notes payable due to banks, see Walter A. Chudson, *The Pattern of Corporate Financial Structure* (National Bureau of Economic Research, Financial Research Program, 1945) p. 46, especially fn. 3.

The situation in 1921 was quite different. The inventory boom which had preceded the postwar contraction was financed to a large extent by bank credit. When the recession came, corporations were pressed to pay off their bank debts, which resulted in a precipitate decline of such debts; consequently no "free" cash came into existence. The amount by which notes payable were reduced in 1921 was approximately the same as the maximum amount of "free" cash held by our sample of corporations in the early thirties.

In Chapter 1 it was shown that the cash balances of our sample of large manufacturing corporations in the thirties behaved differently from those of all reporting manufacturing corporations in that the latter declined after 1929 and the former did not. The explanation of this difference is found in the fact that by the end of the twenties large corporations were less dependent on banks than the average of all corporations. The conclusion follows that the atypical behavior of the cash balance of our sample of large corporations in the thirties was mainly attributable to the fact that bank debt was less important for large concerns than for the corporate universe. However, this assertion cannot be proved statistically since bank debt cannot be segregated from the data in *Statistics of Income,* the source for the cash balance figures for all corporations.[8]

Summary

(1) The accumulation of "free" cash by large corporations in the depression of the thirties reflects the fact that at the close of the twenties large cor-

---

[8] Neither can bank debt be segregated for the sample of medium and small manufacturing concerns, data for which were obtained from the Wisconsin income tax files.

porations had only a small amount of bank debt. The relatively large amount of bank debt before the depression of 1920-21, in contrast, resulted in practically no accumulation of "free" cash in 1921.

(2) The difference between the behavior of cash balances of large manufacturing corporations and those of all reporting manufacturing corporations in the thirties can very probably be ascribed to the fact that large corporations were relatively independent of the banks.

THE ROLE OF PROFITS

The connection between general business conditions and liquidity of corporations may be tested by correlating the profits of our sample of large manufacturing companies with "free" cash. What is of importance is the *expected* profit rate; that is, investments depend on the rate of profit which management expects to make and not on the profit rate made on previous investments. In this analysis, however, the actual profit rate must be used, for it is not possible to measure the expected rate. The limitations of this approach are recognized; but since the tendency displayed by the actual profit rate is undoubtedly one of the important factors shaping plans for the future, it is still sensible to compare the movement of this rate with that part of the cash balance which constitutes "free" cash. The profit rate that will be used in the comparison is the ratio of net income to net worth.

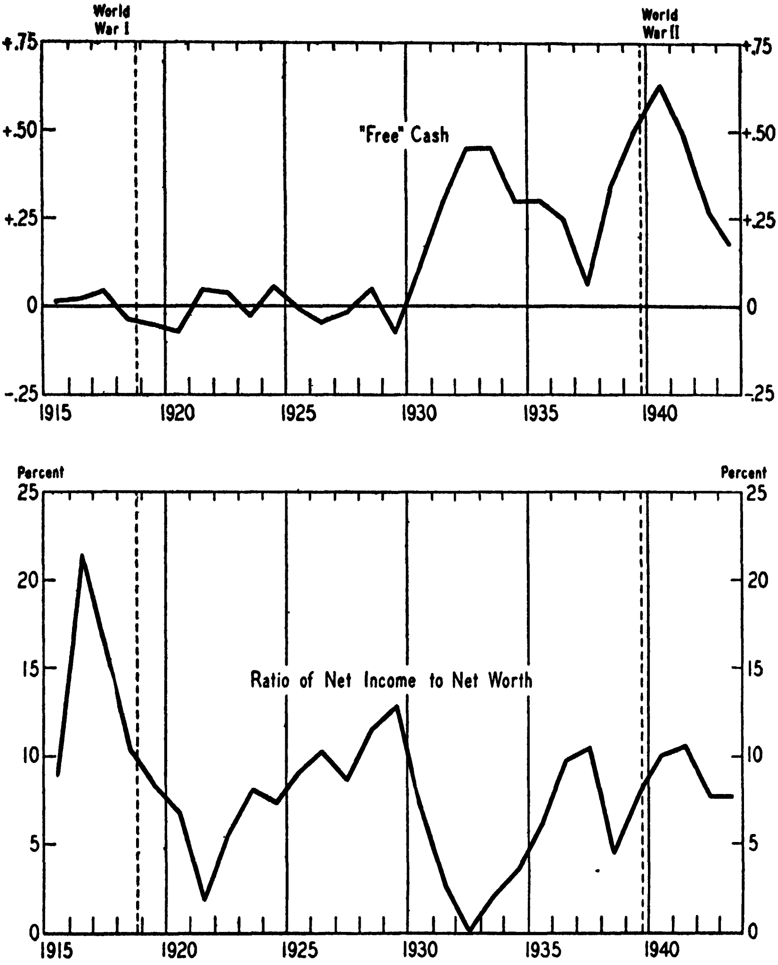
As indicated on Chart 15 the movement of the profit rate from 1929 through 1938 was inverse to that of "free" cash. On the whole, when the profit rate fell "free" cash rose, and vice versa. The mechanism that connects the profit rate with "free" cash in this period is simple. A rising profit rate goes hand in hand with an expansion of business and, therefore, with a rise of total payments. As soon as total payments increase, a larger part of a given cash balance is absorbed by transaction needs, and a smaller part appears as "free" cash. Thus even if the absolute level of the cash balance remains about the same, as was the case with the cash balance for large corporations in the thirties, that component of it which constitutes "free" cash declines as the profit rate rises, and advances when the profit rate falls.

In the twenties the rising profit rate for large corporations was not accompanied by a decline in "free" cash.[4] The explanation

---

[4] There seems to be a negative correlation for minor year-to-year movements of the profit rate and "free" cash in this period.

Chart 15—"FREE" CASH AND RATIO OF NET INCOME TO NET WORTH OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



The declining profit rate for large manufacturing corporations in 1930-32 and in 1938, unlike 1920-21, gave rise to the accumulation of "free" cash. The rising profit rate in the middle thirties led to a decline of "free" cash.

for this lack of correlation has been given in the preceding section: The upswing in the twenties did not inherit "free" cash from the depression of 1921 because in that year cash had been used to reduce bank debt.

THE ROLE OF MARKETABLE SECURITIES

An analysis of the movement of marketable securities is difficult because the information available is insufficient on two vital points. First, the exact composition of marketable securities is not known. If the increase during the period 1925-28 is to be judged, a point of vital importance is to know what part of marketable securities were stocks, what part bonds, and what part call loans.[5] That stocks might have been bought in the twenties with a view to the capital gains that could be made is suggested by a comparison of stock prices and the holdings of marketable securities, which shows a strong correlation between the two throughout that period.[6] Second, to what extent the decline that set in after 1928 came from write-downs of the value of securities and to what extent from actual sales is not known. An analysis of surplus adjustments in the years 1929-32 does not reveal any influence of security write-downs, but this does not prove that they were not made. Indeed, if it is true that stocks were a part of marketable securities up to 1928, it seems inevitable that security write-downs occurred after that date. A safe assumption is that during the thirties the composition of the security portfolio changed in favor of bonds.

Corporations might be expected to prefer marketable securities to idle money; it might be argued that a small yield is better than no yield. On the other hand, it seems reasonable to assume that in times of a high profit rate on operations, the amount of marketable securities in the possession of corporations will not rise more than is necessary to contribute to the liquidity of the company. In other words, marketable securities would not be expected to rise relatively more than cash.

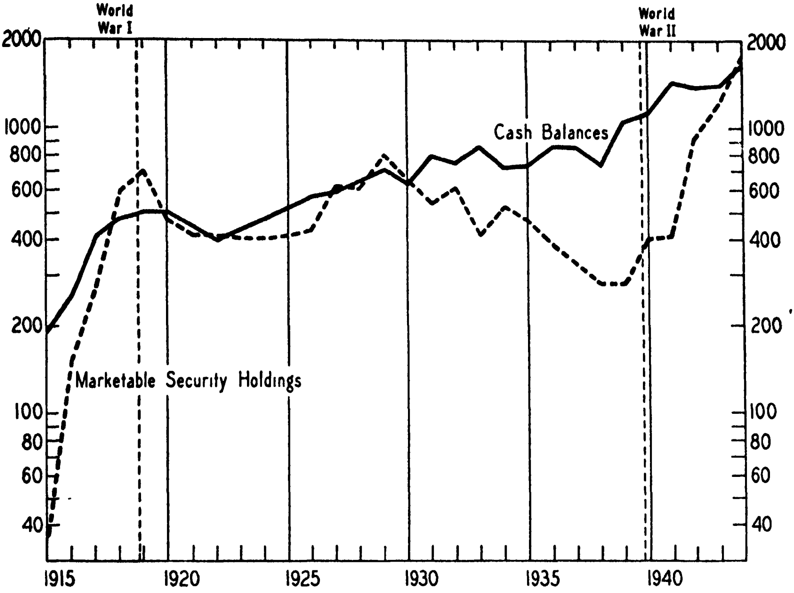
The facts are quite contrary to these expectations. Chart 16 shows that our sample of large manufacturing corporations built up their marketable securities at a more rapid rate than their cash balances during 1925-28, in spite of high profits on operations. In the depression of the thirties when the profit rate was low and "free" cash made its appearance, marketable securities were

---

[5] Call loans were included in marketable securities whenever they were shown separately in the company reports.

[6] Mr. A. Kisselgoff investigated this point in detail, and his results are used here.

Chart 16—YEAR-END CASH BALANCES AND HOLDINGS OF MARKETABLE SECURITIES OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



In most years in the period 1929-37, large manufacturing corporations preferred to draw on their marketable securities instead of cash balances to finance part of their payments.

liquidated to a considerable extent (with the exception of the years 1931 and 1933).[7]

Why did corporations increase their marketable security holdings during the twenties in spite of the high rate of return which (to judge from the high profit rate on operations) they could have obtained if they had invested their funds in operating assets? Since this problem transgresses the topic of the present study, a detailed analysis will not be attempted here; a few remarks must suffice.

As already indicated above, rising prices on the stock exchange, which promised substantial capital gains in addition to dividends,

[7] The figures available for the sample of medium-sized and small corporations do not permit the separation of marketable securities and investments; therefore, the movement of marketable securities alone cannot be shown for this group of corporations.

may have induced corporations to put an increasing part of their funds into securities. Another factor is that plant expansion of large industrial concerns proceeded at a comparatively high rate during the twenties. At such times liquid funds have to be accumulated to prepare for huge payments. If the stock market is favorable, corporations may take advantage of the situation by floating stock even though they may intend to use the money only in the rather distant future. The funds thus obtained need not be held in the form of cash but can be invested in securities or lent on call. In addition, in the later stage of a boom when the economic system is working at relatively full capacity, an attempt to increase operating assets may meet with delays, so that accumulated funds in the meantime either have to be kept idle or have to be invested in securities. As such investment was profitable in the late twenties, it is no wonder that corporation funds were put to that use.

The explanation of the liquidation of securities in the thirties is more difficult. By selling securities before their "free" cash was exhausted, companies kept their cash balances high, at the expense of the earnings which they could have obtained from securities. The preference for cash in the first years after 1929 is understandable considering the highly unstable condition of the security market and the extreme uncertainty about the future which prevailed in those years. Furthermore, interest rates, on the whole, were falling in the thirties, and therefore bond prices showed a rising trend. It is well known that from about 1935 onward the opinion was widespread that interest rates could not stay at the low level which they had reached (or bond prices remain at their high level). This feeling may not only have prevented corporation officials from investing excess cash in government and other bonds, just as it prevented bankers from putting their excess reserves into fixed interest securities, but it may actually have induced them to sell bonds in order to realize capital gains as long as it was still possible to do so. This is particularly plausible for the years after the bottom of the depression was reached, and even more so for the years 1936 and 1937, when the profit rate on operations was again high. If an increase in inventories can be financed by selling securities at a profit, it is more advantageous to do so than to draw on cash balances, provided no further rise of security prices is expected. That the prices of bonds influence the amount of marketable securities held by corporations is indicated by developments in the two years 1931 and 1933. In those years, banks liquidated securities heavily for several months, and the low prices made the purchase of such securities attractive to corporations.

Summary

(1) The rise in corporate holdings of marketable securities in the twenties is probably due to the attractive investment opportunity which the stock exchange offered in those years as well as to the expansion of enterprise which required a substantial amount of funds that were temporarily invested in securities or lent on call.

(2) Such liquidation of marketable securities as occurred in the thirties can probably be ascribed to the rise in the prices of bonds, and (after the bottom of the depression was reached) to the rise in current assets for which the sale of marketable securities provided part of the necessary funds. The high bond prices made it advisable to finance an increase in assets by drawing on marketable securities rather than on cash. In the two years (1931 and 1933) when bond prices fell, the corporations purchased marketable securities.

THE ROLE OF DIVIDENDS

No causal relationship exists between "free" cash and dividend payments in the sense that the former determines the latter.[8] Dividend payments (see Chart B-2 in Appendix B) tend to rise and to fall with net income, not with the liquidity position of companies. In the business contraction of the thirties, profits for our sample of large manufacturing companies declined sharply (in 1932 net losses were incurred). In such a situation companies reduce their dividend payments although, as a rule, the reduction is not so great as the decline in net income would warrant. All that can be said, therefore, is that "free" cash would have been greater in the early thirties if the companies had reduced their dividend payments still further.

---

[8] In 1943 some companies reported that they increased their dividends because they had idle cash on hand. But it must be remembered that 1943 was also a year of increased earnings; moreover, as a result of war material priorities, etc., there was only a limited outlet for cash disbursement in the production sphere.

•6•

LIQUIDITY RATIOS AND CASH BALANCES

THE LIQUIDITY OF AN ENTERPRISE cannot be measured by one single figure or ratio; there is a scale of ratios expressing different degrees of liquidity. The most important of these ratios, according to the degree of liquidity they measure, are (I) cash to current liabilities, (II) cash plus marketable securities to current liabilities,[1] (III) cash plus marketable securities plus receivables to current liabilities (quick ratio), and (IV) current assets to current liabilities.

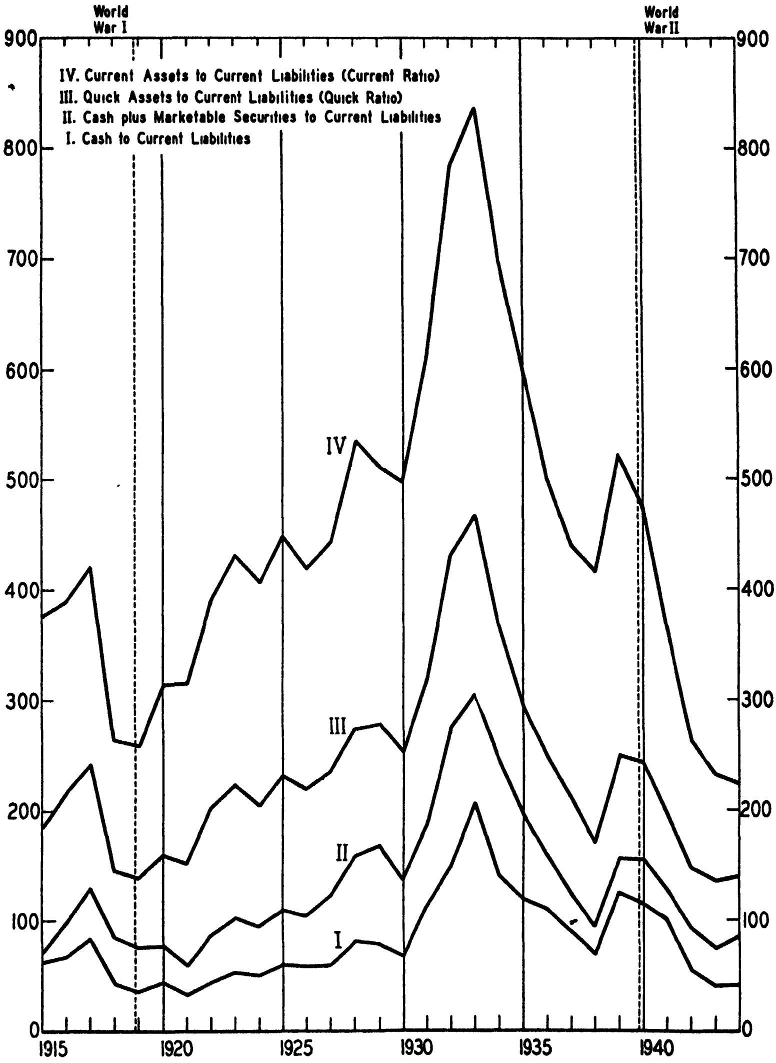
These four ratios for our sample of large manufacturing companies rise and fall together, a rule to which there are only few exceptions (Chart 17). This similarity is not so surprising as it may appear to be at first sight. Only rather violent changes in the relative importance of the various components that make up current assets are likely to cause the liquidity ratios to move in opposite directions. As long as the changes keep within moderate limits, they simply cause different relative movements of the ratios. The fact that the distance between Curve II and Curve I on Chart 17 is smaller in 1937 than in 1927 indicates that the relative importance of marketable securities compared with cash was less in 1937 than in 1927. That Curve III is closer to Curve II in the thirties than in the twenties signifies that receivables were relatively less important in the thirties than in the earlier decade.

The wide range within which each ratio fluctuates reflects the fact that corporations do not aim at keeping liquidity ratios stable. Indeed it would often be impossible or in any case nonsensical to carry out such a policy. After 1929, for instance, all four liquidity ratios rose sharply because of a decline in current liabilities coupled with a smaller decline in most of the current assets. Given the

---

[1] In the case of the sample of medium-sized and small corporations, the item investments is considered a current asset and the nearest equivalent to marketable securities. The Wisconsin income tax returns, from which the sample was compiled, provide an item "investments" but not an item "marketable securities." It should be kept in mind that "investments" undoubtedly include such assets as investments in subsidiaries.

Chart 17—YEAR-END LIQUIDITY RATIOS OF SAMPLE OF LARGE MANUFACTURING CORPORATIONS (SAMPLE B)



volume of current liabilities, a policy that aims at keeping liquidity ratios fixed means either that part of current assets should be turned into fixed property—a policy which is not common in times when no profits are made and excess capacity exists[2]—or that companies should decrease their liquidity ratios by paying out more dividends—again an unlikely action in the absence of profits.[8] All that can be said is that companies undoubtedly strive to avoid letting the ratios fall below certain levels. The rule that the ratio of current assets to current liabilities should be at least two to one, and the quick ratio at least one to one, has often been commented upon. These two rules by themselves do not establish a minimum for cash balances since the shares of the components that enter into the total constituting the numerators of the two ratios may vary. However, it is reasonable to assume that as long as management has any control over the liquidity ratios (which may not be the case in times when heavy unexpected losses occur) not only these two ratios but also the ratio of cash to total current liabilities will not be allowed to fall much below the limit set by current financial standards, although it is impossible to say exactly where this limit is. A safe assumption is that all through the period 1919-39 the ratio of cash to current liabilities was above the minimum, just as the quick ratio and the ratio of current assets to current liabilities were above their respective minima. If this assumption is correct, the conclusion follows that considerations of liquidity, as measured by any one of the four ratios, played a negligible part in the determination of cash balances in the period under consideration.

---

[2] It may, of course, happen in some cases that building for the future is done in time of depression. But these cases are the exception.

The ratios discussed so far are not the only ones by which liquidity can be measured. The ratio of cash to payments that was used in earlier chapters is a fifth measure of liquidity. A rise in this ratio suggests that a certain amount of cash is set "free," i.e., not required for cash payments. In this sense a rise indicates increasing liquidity, and a fall decreasing liquidity. Because of its stability up to 1929 this liquidity ratio is considered more important, for a study of the movements of cash balances, than any of the four ratios presented in Chart 17. For this reason use was made, in the previous chapters, of the ratio of cash to payments (and cash plus marketable securities to payments). It is true that the other four ratios—and not the ratio of cash (or cash plus marketable securities) to payments—are the ones discussed in accounting literature. They are indeed important for short-term creditors of the company, but they are definitely of little importance to our special problem. Business management also gives little consideration to such ratios, except as it is necessary to do so to meet requirements of credit grantors.[4]

---

[8] Although the purpose of the present study is to investigate cash balances, not to analyze in detail the movements of the liquidity ratios, attention may be drawn to the fact that the ratios do not show a definite cyclical pattern. They rose during the boom of the twenties and continued to rise at an accelerated rate in the depression until 1932. Only after 1932 do we find a counter-cyclical pattern.

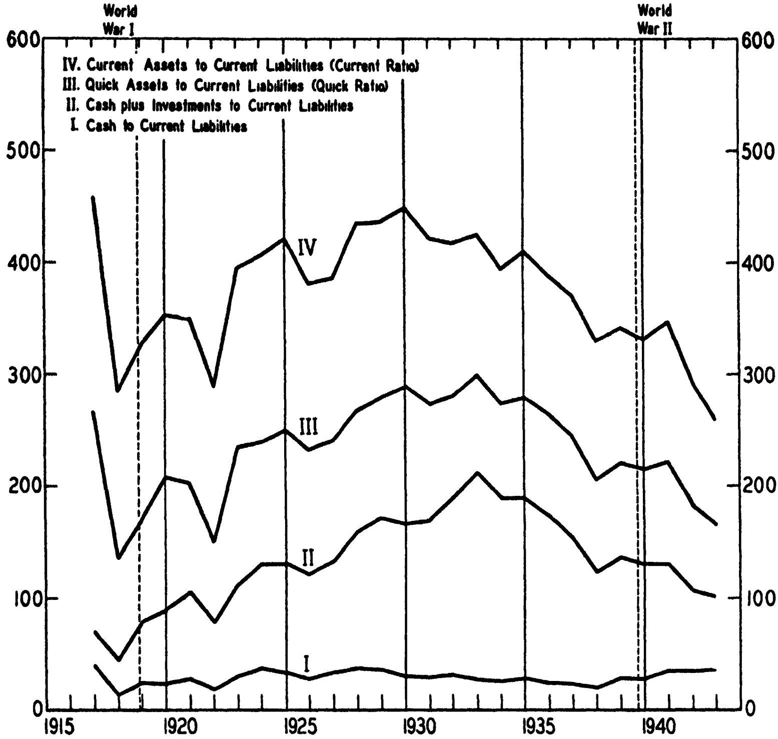
The liquidity ratios for the sample of medium-sized and small manufacturing corporations (Chart 18) yield a picture somewhat different from that shown by the ratios for large manufacturing companies. The point to be stressed is the relative stability of the ratio of cash to current liabilities for the medium and small concerns, indicating that the cash holdings of these companies never were much above what was considered the necessary minimum. The ratio of cash to payments, discussed in Chapter 4, indicates that "free" cash increased in the depression of the early thirties. The relative stability of the ratio of cash to current liabilities suggests that the increase in "free" cash was necessary to prevent the ratio from falling too low, which strengthens the conclusion that the holding of "free" cash by manufacturing corporations in the thirties was much more a phenomenon of large than of medium-sized and small corporations.

A final comment on liquidity is fitting at this point. The four ratios shown in Charts 17 and 18 can serve as a measurement of liquidity for individual corporations or for a small sample of corporations, but they cannot serve as a measurement of the liquidity of all enterprises or of a large sample of them. This fact is quite clear for the "quick" ratio and the ratio of current assets to cur-

---

[4] A comparison of the ratio of cash to payments with the ratio of cash to current liabilities shows that the two ratios tend to move together when they are experiencing sharp changes (from 1929 onward with the exception of the years 1933 and 1940), whereas if the changes are minor, as in the twenties, the movements of the ratios differ. The ratio of cash to payments is the ratio of the average of two succeeding year-end cash balance figures to payments in the year between the cash balance dates. The ratio of cash to current liabilities, on the other hand, is the ratio of cash holdings at the end of the year to then existing current liabilities, which will become part of total payments only during the coming year. There is therefore no a priori reason why the two ratios should move together; but it is understandable that they show a tendency to do so after 1929. If, as a result of a depression, payments and current liabilities decline while cash balances remain relatively stable, as they did after 1929, the two ratios are bound to change together. The same is true if payments and current liabilities rise as a result of an upswing in business, provided that the absolute level of cash balances does not change much (1933-37).

Chart 18—YEAR-END LIQUIDITY RATIOS OF SAMPLE OF MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS



rent liabilities. From the point of view of the individual corporation, receivables and also inventories are liquid assets which can be turned into cash fairly easily on short notice. However, receivables and inventories cannot be considered liquid assets for the corporate universe, since their liquidation by one corporation in most instances[5] means that cash is drawn from another corporation and not from outside sources. Nor can the ratios of cash and of cash plus marketable securities to current liabilities serve as a measurement of liquidity for all corporations. If, for instance, cash or marketable securities were used to reduce accounts payable, the ratios would increase. Yet the liquidity of the aggregate of corporations with respect to the "outside" economic sphere would not be affected by this procedure.

---

[5] At all times, some part of receivables represents sums owed by consumers and some part of inventories (finished goods) can be liquidated by sale to consumers. Also at the present time, a substantial part of total receivables represents sums due from the government. Part of these assets are therefore liquid from the point of view of the corporate system as a whole in the sense that they are capable of drawing funds from outside the system (i.e., from consumers and/or the government).

The liquidity of *all* companies can be tested only by the following ratios: (1) The ratio of cash to payments.[6] A rise in this ratio suggests that the aggregate of productive units holds additional money which could be disposed of at any time.[7] (2) The ratio of cash plus marketable securities to payments. If marketable securities can be sold to the banking system or other investors, excluding enterprises, they can be used to increase the total deposits at the disposal of the companies. In this sense they contribute to the liquidity of the aggregate of enterprises. But since the willingness of the banking system and other investors to buy marketable securities cannot be counted upon, the value of this ratio for the measurement of total liquidity depends on the special conditions of the banking system and these other investors at the time for which the measurement is made. (3) The ratio of cash to bank debt plus "other current liabilities" (tax liabilities and liabilities to other than business enterprises). This ratio measures the liquidity of the aggregate of companies in relation to the claims which can be brought against them from "outside" the universe of productive enterprises. (4) The same is true for the ratio of cash plus marketable securities to bank debt plus other current liabilities. To this ratio, however, remarks similar to those made with reference to the ratio of cash plus marketable securities to payments apply.[8]

---

[6] For all practical purposes the ratio of cash to sales can be substituted for the more accurate ratio of cash to payments, since the two ratios show essentially the same movements.

[7] The reader may be inclined to argue that a large part of the payments is made from one company to another and, therefore, that the ratio of cash to total payments is not a better measurement of liquidity than any of the other four ratios discussed. This is not so. For the aggregate of corporations, accounts receivable can largely be canceled against accounts payable; both refer to a given moment of time. Payments on the other hand are a flow of money. It would be correct to cancel part of the flow of payments against part of the flow of receipts, if a measure of the net inflow or outflow of cash is desired. But in our discussion the average cash balance (which is not a flow of money) is related to the flow of payments. If the (unknown) payments to other corporations are deducted from the total payments figure, then the cash held for these payments should be deducted from the cash figure. If this were done, it is doubtful that the ratio of cash to payments would change materially. The data available, however, do not permit such a correction.

[8] A fifth measurement is to include in the numerator of the ratio receivables which are owed by consumers and the government, and that part of inventories which can be sold within a relatively short time outside the corporate universe. It is, of course, practically impossible to subdivide receivables and inventories from this point of view.

The difference between the liquidity of an individual enterprise and that of an aggregate of enterprises has to be kept in mind. It is one of the reasons why, in this study, the ratio of cash to payments has been used rather than any one of the ratios shown in Charts 17 and 18.

SUMMARY

(1) The usual liquidity ratios (cash to current liabilities, cash plus marketable securities to current liabilities, quick ratio, and ratio of current assets to current liabilities) are on the whole of little importance in a study of the movements of cash balances of corporations.

(2) These ratios cannot serve as measures for the liquidity of the aggregate of corporations. Among the ratios which can be used for this purpose, the ratios of cash, and of cash plus marketable securities, to payments are the most important.

• 7 •

THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS, WORLD WAR I

A SHORT DISCUSSION OF THE LIQUIDITY position of our sample of large manufacturing corporations during the years of World War I will serve as a useful background for an analysis of cash balances in World War II. The war years 1915-18 were years of sharp business expansion. As in other periods of expansion, operating assets were increased, an increase that was financed by retained profits, new issues of stocks, trade credits, and new bank loans.

The question of primary interest in our analysis is whether or not companies increased their cash balances relative to their payments. As the managements of many corporations had to anticipate a conversion to peacetime production when the war was over, they might have built up a strong liquidity position during the war in order to be prepared for the contingency.

Corporations prepare for such contingencies partly by setting up special reserves. During the first World War they did this only to a small extent;[1] in fact, in our particular samples of large manufacturing corporations only one corporation had a special reserve for postwar contingencies. Probably special appropriations for contingency reserves were provided in quite a large number of cases, but taken altogether the amount of these appropriations was relatively small. At any rate, the mere setting up of a reserve on the corporation's books does nothing to make the corporation more liquid. The liquidity position depends on the composition of assets, and only if the setting up of reserves is associated with a deliberate increase of liquid assets can it be said to increase the corporation's liquidity. The income set aside as special reserves may go to swell the corporation's inventories, receivables, or fixed equipment instead of increasing its cash balance or marketable securities. The liquidity position therefore has to be investigated by analyzing not the special reserves set up during the war but the liquid assets in relation either to payments or current liabilities.

---

[1] See Charles H. Schmidt and Ralph A. Young, *The Effect of War on Business Financing: Manufacturing and Trade, World War I* (National Bureau of Economic Research, Financial Research Program, 1943).

A first glance at the cash balance figures alone gives the impression that the liquidity of corporations increased greatly during the war years, since cash in 1918 was some two and a half times higher than in 1914. This impression is strengthened if the increase in cash balances of our sample of large manufacturing corporations is related to the increase in total means of payment. As Table 1 shows, the percentage increase in cash balances was greater than the percentage increase in total means of payment; in other words, the large corporations increased their share in total means of payment during the first World War.

Table 1—INDEXES OF CASH BALANCES OF LARGE MANUFACTURING CORPORATIONS AND OF TOTAL MEANS OF PAYMENT, 1914-21
(1914 = 100)

	Cash Balances		
Year	Sample A[a]	Sample C[a]	*Total Means of Payment*[b]
1914	100	100	100
1915	135	135	110
1916	192	210	127
1917	237	251	141
1918	248	265	159
1919	245	262	183
1920	221	234	189
1921	215	209	188

[a] For a description of the sample see Appendix A.

[b] Includes demand and time deposits, excluding government deposits, of all banks (including savings banks) plus currency in circulation outside banks. Data from *Banking and Monetary Statistics* (Board of Governors of the Federal Reserve System, 1943) p. 34.

This impression of an increased cash liquidity during World War I is misleading, however. If liquidity is measured by the ratio of cash to payments, the liquidity of corporations is found to have decreased. The ratio, after rising between 1915 and 1917, fell in 1918 to a level lower than in 1915. (See Table 2.) No

Table 2—LIQUIDITY POSITION OF SAMPLE C OF LARGE MANUFACTURING CORPORATIONS, 1915-22[a]
(dollar figures in millions)

Year	*Average Cash*[b]	*Average Marketable Securities*[b]	*Estimated Cash Payments*	Ratio of: Cash to Payments[c]	Ratio of: Cash Plus Marketable Securities to Payments[d]
1915	$169	$ 56	$2,303	7.3%	9.8%
1916	249	127	3,397	7.3	11.1
1917	332	259	4,423	7.5	13.4
1918	372	388	5,893	6.3	12.9
1919	380	350	6,113	6.2	11.9
1920	358	262	6,088	5.9	10.2
1921	319	245	4,142	7.7	13.6
1922	315	242	4,191	7.5	13.3

[a] For a description of the sample see Appendix A.

[b] Average of two successive year-end figures.

[c] Ratio of average cash of two successive year ends to total payments in the year between the two dates.

[d] Ratio of average cash plus average marketable securities of two successive year ends to total payments in the year between the two dates.

"free" cash existed at the end of the war, whether the situation in 1918 is compared with that of the beginning of the war or with that during the expansion of the twenties. It must be pointed out that, in spite of the fact that their cash position in 1918 was not very favorable, corporations in the expansion immediately following the war drew on their cash balances with the result that in 1920 the ratio of cash to payments was the lowest in the entire period, 1915-43.

As for marketable securities, the point to be stressed first is that World War I is responsible for the corporations' now well-established custom of holding marketable securities. At the close of 1914 such holdings of corporations were negligible, but under the impact of the various war loan drives the figure rose greatly. By the end of 1918 our sample of large manufacturing corporations (sample C) held more than twenty times the amount of securities which they held four years earlier. There is no doubt that this increase in marketable securities made possible the decline in cash liquidity. Since marketable securities are a close substitute for cash, the companies could lower their cash liquidity as they increased their holdings of securities. Objection may be raised to the contention that marketable securities are as good as cash, on the ground that a sudden rush to liquidate them would cause a sharp fall in their prices. There is some truth in this objection for the period under consideration. When the corporations actually did liquidate a large part of their holdings of marketable securities in 1919 prices began to break, particularly since commercial banks were not prepared to take over securities in large volume. Nevertheless, the corporations considered that their holdings of marketables added to their liquidity, even though in many cases they had to sell them at a loss.

The ratio of cash plus marketable securities to payments in 1918 was actually higher than at the beginning of the war — 12.9 percent in 1918 compared with 9.8 percent in 1915 (Table 2). In the postwar boom, corporations were able to draw on their marketable securities, with the result that by 1920 the ratio of cash plus marketable securities to payments declined to 10.2 percent. The funds obtained through sales of marketable securities apparently were used to discharge tax liabilities.[2]

The fact that marketable securities plus cash constituted a higher percentage of total payments in 1918 than in 1915 does not permit the conclusion that there was a conscious policy on the part of corporations to build up excess liquidity. If the ratios commonly in use for measuring the liquidity of an industrial company (see Chart 17) are considered, they are found to have been lower in 1918 than in previous years. The sharp decline in the ratios between 1916 and 1918 seems to indicate the absence of any conscious effort to build up a special liquidity for the purpose of postwar contingencies. Nor is the building up of such special liquidity necessary as long as the corporations can rely on obtaining bank credit. The inventory boom of 1919 and the first half of 1920 was indeed financed overwhelmingly by bank loans, and not by drawing on liquid funds built up during the war.

For medium-sized and small manufacturing corporations (for which figures are available only since the end of 1916) the cash liquidity shows no appreciable change over the last two years of World War I. The cash balance of this group of companies at the end of 1918 was 27.4 percent above that at the close of 1916. Since payments increased only slightly more than average cash, the ratio of cash to payments in 1918 was approximately the same as in 1917 (2.6 percent as against 2.7 percent). However, the medium and small corporations apparently were heavy buyers of marketable securities; the item "investments" which includes these securities multiplied 3½ times between the end of 1916 and the end of 1918 and continued to increase through 1920. The increase during the war years must have consisted to a large extent of government securities bought during the war loan drives. The fact that "investments" decreased sharply in 1921, the year of business contraction, also suggests that this group of corporations had made heavy purchases of marketable securities during the war period. As a result of these purchases the liquidity position of this group seems to have improved in 1918 compared with 1917. The ratio of average cash plus "investments" to payments was 8.7 percent in 1918, as against 6.5 percent in 1917. Although only part of "investments" can be considered as liquid funds, the figure indicates the direction in which the liquidity of medium-sized and small manufacturing corporations moved in the late years of World War I.[3]

---

[2] The decrease in current liabilities in 1919 was greater than the decline of marketable securities. A closer investigation shows that the item "other current liabilities" was responsible for the decline of total current liabilities. Since tax liabilities are the main part of "other current liabilities," we can conclude that the funds obtained by sales of government bonds were used to reduce the tax liabilities. Notes payable *increased* at the same time.

SUMMARY

(1) Neither large nor medium-sized and small manufacturing corporations built up a special *cash* liquidity during World War I.

(2) The ratio of cash plus marketable securities to payments for large manufacturing corporations was higher at the end of World War I than at the beginning, indicating that a certain amount of "free" liquid funds were available at the close of the war. Medium-sized and small manufacturing corporations also possessed such free funds.

(3) These funds were used by large manufacturing corporations mainly to discharge tax liabilities. The inventory boom that set in after the war was financed not by drawing on free liquid funds but by bank credit.

---

[3] The available material does not separate trade payables and bank debts for this group of corporations. It is therefore not possible to tell to what extent this group of corporations had to rely on bank credit for the financing of the postwar inventory boom.

• 8 •

THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS, WORLD WAR II

LIMITATIONS OF THE DATA

THE INTERPRETATION OF BALANCE SHEETS published by corporations during World War II presents difficulties which have to be brought to light before an analysis of the present liquidity position of corporations can be presented. Some of these difficulties concern items of the balance sheet which do not play any role in the analysis that follows and, therefore, need not be discussed here in detail. That the "net income" shown in the balance sheet for war years is a less reliable figure than the one for peacetime years, because of renegotiation of contracts and other factors, is well known. It is also common knowledge that a government-owned plant run by a company is not among the assets of the company and, therefore, that the ratio of fixed property to other items of the balance sheet is distorted.

The difficulties that arise in the interpretation of sales and cash figures are perhaps less well known. Since our discussion is based largely on these two items,[1] the influence that the conditions under which war production is carried on may have on these items needs to be emphasized.

Sales result from the operation of the corporation's own plant or of the government-owned plant. A few companies, in their reports, give figures for sales under each type of ownership; others do not. Some reports state explicitly that the published sales figure excludes sales resulting from the operation of government-owned plants. Other reports do not make any explicit statement, but carry in "other income" an item, "fees arising from operation of government-owned facilities" or some similar descriptive title. In this case, the plant is operated under a cost-plus-fixed-fee contract; it can then be assumed that the sales figure excludes sales resulting from operation of the government-owned plant. In many cases no hint is given at all. However, a reasonable assumption is that, in the majority of cases, sales which result from the operation of plants that were leased to the corporations are *included* in the company's sales figure as reported.

---

[1] The payments figure used throughout this study is derived from the sales figure. (See Appendix C.)

As for cash, company reports often mention a special deposit "to be used exclusively on United States government contracts" (or some similar caption). For the present study, this item has been added to the other cash of the company. If a corporation that runs a plant for the government *includes* the corresponding sales in its reported sales figure, the ratio of cash to sales (or payments, derived from sales) as computed here is unbiased, since the cash balance includes cash required to operate the government plant. In cases where cash necessary for the operation of government plant is included in the cash shown in the balance sheet but corresponding sales are not, the ratio would be too high. Therefore, the ratio used in our analysis, if it is biased at all, is biased in an upward direction.

POSTWAR RESERVES

Industrial concerns are acutely aware of the instability of present conditions and many firms have considered it essential to make some kind of financial provision for various contingencies arising out of the war and, more especially, for the reconversion to peacetime production.[2] This they have done by setting up special reserves, usually out of current earnings.[3] A survey by the American Institute of Accountants, based on 1941 fiscal year-end reports of 429 large corporations in 15 manufacturing and trade groups, shows that by the end of that year about one-fifth had established contingency reserves of one type or another for postwar purposes.[4] Tabulations of corporate annual reports for 1942, also made by the Institute, indicate a considerable increase during the year in the proportion of companies providing postwar reserves.[5] A detailed investigation of postwar reserves made by the Securities and Exchange Commission and based on 250 selected companies reveals that 146 companies by the end of 1942 had set up reserves for war and postwar contingencies.[6]

---

[2] The American Institute of Accountants took early cognizance of this problem and in "Accounting for Special Reserves Arising Out of the War," *Accounting Research Bulletin,* No. 13 (January 1942) discussed the many technical problems in connection with accounting provision for postwar readjustment outlays.

[3] In some cases sums that were previously classified under "surplus" (representing past earnings) have been earmarked as reserves for contingencies; in such cases the setting up of reserves clearly involves no change in the corporations' financial positions compared with what they were before the reserves were set up.

[4] *Journal of Accountancy,* Vol. 74, No. 2 (August 1942) pp. 125-32.

Of the 45 corporations in our sample B,[7] 35 set up special reserves at one time or another after the end of 1939; some of these reserves were later released, particularly in 1943. The reasons for which reserves were set aside may be classified as follows:

1. Possible Decline in Inventory Values

Apart from protecting themselves against a decline in inventory values by a change-over from the "first-in, first-out" method of inventory valuation to the "last-in, first-out" method, many companies set up special reserves against a possible decline. Under the Contract Settlement Act of 1944, however, the danger of losses on inventories is largely removed.

2. Postwar Conversion of Plant and Equipment

Under this heading are included the costs of rearranging and adapting to postwar needs buildings and equipment now in use, and the costs of reinstalling machines that were removed and stored during the war. Also, in this classification, one corporation[8] mentions carrying overhead costs during the period of readjustment when current receipts will be low; and a corporation in the aircraft industry[9] refers to the development of non-aircraft products after the war.

3. Deferred Repairs and Maintenance

In some instances repairs and replacements that would have been made in normal times have had to be postponed, partly because of the necessity of keeping all machines continuously in operation, and partly because new machines and parts of machines have not been obtainable. In a few cases special reserve accounts have been set up for repairs and maintenance, though provision has more often been made through the normal medium of reserve for depreciation and obsolescence.

---

[5] *Ibid.*, Vol. 76, No. 5 (November 1943) pp. 391-408.

[6] Securities and Exchange Commission, *Report on Corporate War and Post-War Reserves* (Philadelphia, October 1943).

[7] For a description of this sample see Appendix A.

[8] J. I. Case, *Annual Report for 1942.*

[9] Boeing Aircraft Company, *Annual Report for 1942.*

4. Renegotiation of Government Contracts

Reserves under this heading are intended to provide for retroactive readjustments of earnings that may arise during the war through the government's downward adjustment of the prices it has agreed to pay for deliveries of war materials.[10]

5. Dismissal Compensation

Concerns are making provision for payments to employees during the period of lay-off that is expected to occur while plant readjustments are being made.

Many of the reserves are simply called "reserves for contingencies," but inasmuch as they are evidently intended as a general provision for one or more of the purposes indicated above, it is fitting that they should be included in any statistical summation of special war reserves. For our 45 corporations, the total of all the sums allocated to reserves, which seem to be connected with wartime or postwar adjustments, amounted to $275 million in the period 1940-42; this sum was equivalent to 10 percent of the corporations' net income (after taxes and before dividends) during those years. By the end of 1943 the total amount of such reserves was $406 million.

The *primary* function of the special reserves is that of an accounting procedure which tries to make allowance for the lack of precision of cost determination. Managements of corporations rightly hold that in present circumstances, when the duration of their operations along present lines and on their present scale cannot be predicted any more than the duration of the war itself, the allocation of costs to specific fiscal periods of relatively short length has become an even more difficult task than it was in "normal" times.

A large part of the risk connected with the amortization of equipment for the production of war goods is being shouldered by the government for emergency facilities. This has been done in six ways: (a) Some of the plants and facilities are financed and owned by the government through the Defense Plant Corporation (a subsidiary of the Reconstruction Finance Corporation) which leases them to the corporations operating them; (b) others are financed by the corporations which operate them, but the government contracts to buy them on sixty monthly instalments or upon earlier termination of the contract; (c) some have been financed as part of allowable costs under contract; (d) some plants and facilities have been financed by the corporations, but they may be amortized for tax purposes over sixty months; (e) some plants are owned by the War and Navy Departments and are operated either by them or by private corporations; (f) some are financed by loans from the Reconstruction Finance Corporation.

---

[10] There is also considerable uncertainty connected with the cancellation of government contracts which will take place when the war ends. Some such cancellation is already occurring, and considerable business uncertainty is attached to these wartime cancellations.

Industrial corporations, however, will have to face the costs of actually converting plants to peacetime production, the possibility that they may incur losses on their inventories, and the necessity of carrying large overhead costs that are unmatched by normal sales volume while the period of readjustment lasts. Corporation managers are probably justified in representing these costs as a charge against the income of the war period. There is no precise way in which costs can be allocated to the operations of individual years, since both the magnitude of the costs and losses, and the length of the war and therefore of the period over which they should be distributed, are uncertain. It is correspondingly uncertain what part of any year's sales proceeds can be truly considered as net income. Undoubtedly, corporations have created "special reserves" out of current earnings to emphasize the lack of finality of the figure declared as net income.[11]

Additions to earned surplus, though they are not separated as a distinct reserve labeled for a particular purpose, are not essentially very different from special war reserves. The important thing is that the corporation retains earnings within the business and distributes that much less as dividends. For the 45 corporations the proportion of retained earnings to net income as shown in the balance sheets in the four years 1940-43 was 47.1 percent, compared with 29.8 percent in the three years 1935-37. Retaining income instead of paying it out in the form of current dividends serves to build up a reserve against which the extraordinary costs connected with conversion can later be charged. By setting up special reserves and increasing the earned surplus, management tends to avoid overstating income at present and understating it in the immediate postwar years when earnings are, in any case, likely to be lower than they are now.

---

[11] The suggestion has been made by accountants (see American Institute of Accountants, *Accounting Research Bulletin*, No. 13, January 1942) that the use of the term "net income" in profit and loss statements should be discontinued for the duration of the war and the period of adjustment immediately afterward, and that the final item shown should be "increase or decrease in earned surplus."

In the present study, the question of particular interest is whether or not it is true (as is widely believed) that the establishment of these special reserves also performs a second function, that of strengthening the liquidity of corporations.

LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS

The composite balance sheet of the sample of 45 large manufacturing corporations yields no evidence, up to the end of 1943, of any exceptionally heavy increase in holdings of cash. The actual increase of cash was from $1,131 million at the end of 1939 to $1,665 million at the end of 1943 (Table 3). The percentage increase (47) was less than that of the total means of payment (78) in the same period.[12] Moreover, the ratio of cash to payments — which relates cash to the work it has to do — actually fell from 12.3 percent in 1939 to 7.5 percent in 1943 (Table 4); the 1943 ratio was not much higher than that for 1937, the year in which the ratio was the lowest of any time since 1929. Thus by neither standard of comparison — i.e., reference to the total means of payment or reference to the volume of corporate transactions — does the increase in cash holdings of this sample appear to be abnormally high. Therefore, on the basis of the corporations' cash position alone, the argument that their liquidity position has been strengthened considerably is not justified. This conclusion is contrary to a widespread belief, which obviously is based on the observation that the *actual* increase in the cash balance of corporations has been substantial.

---

[12] It also was far below the percentage increase in cash for all corporations. The Securities and Exchange Commission estimates that the cash of all corporations more than doubled in the period between the end of 1939 and 1943.

Table 3—COMPOSITE BALANCE SHEET AND SELECTED INCOME ITEMS, 1939 AND 1943, FOR SAMPLE B OF LARGE MANUFACTURING CORPORATIONS [a]
(*millions of dollars*)

Item	*1939*	*1943*	*Increase or Decrease, 1939-43*
Assets			
Cash	$ 1,131	$ 1,665	$ 534
Marketable securities	403	1,798	1,395
(tax notes)		(605)	(605)
Receivables	853	2,098	1,245
Inventories	2,303	3,298	995
Total current assets	4,690	8,859	4,169
Fixed assets [b]	5,483	5,358	–125
Investments	1,269	1,215	–54
Other assets	345	664	319
TOTAL ASSETS	11,787	16,096	4,309
Liabilities			
Notes payable	75	167	92
Accounts payable	420	946	526
Other current liabilities	490	2,859	2,369
(tax liabilities)	(279)	(1,727)	(1,448)
Total current liabilities	985	3,972	2,987
Long-term debt	1,335	1,264	–71
Other liabilities	400	429	29
Capital stock	5,739	5,641	–98
Surplus	2,910	3,866	956
Reserves	418	924	506
(special war reserves)		(406)	(406)
TOTAL LIABILITIES	11,787	16,096	4,309
Sales	8,933	20,366	11,433
Net income	699	795	96
Cash dividends	532	513	–19
Depreciation charges	482	627	145

[a] For a description of the sample see Appendix A.
[b] Net of depreciation reserves.

Our earlier analysis, however, has shown clearly that an attempt to measure the liquidity of corporations cannot be confined to consideration of their cash liquidity alone. If only the cash balance is taken into account, a distorted result is obtained; for instance, if the year end occurs immediately after a war bond drive has been concluded, the cash balance will be relatively low, and, therefore, the ratio of cash to payments will be low; the reverse will be true if the year end falls in a period just preceding a war bond drive. For this reason, marketable securities must be included in our analysis. Such securities can be considered as good as cash, not only from the standpoint of an individual corporation but also from the standpoint of all corporations together, since liquidation of the securities is unlikely to cause a sharp drop in their prices for the following reasons: First, corporations can use part of the securities (especially tax notes) to make tax payments, an offset which is equivalent to a release of cash. Second, large amounts of government securities are short-term and bring in cash automatically, so there is no necessity to sell them. Third, if corporations should begin to sell the longer-term bonds, it is highly possible that the monetary authorities would support the market if it should show a tendency to sag.

Although, as indicated in Table 4, the ratio of cash plus marketable securities to payments in 1943 (14.9 percent) was lower than in 1939 (16.2 percent), it was considerably above the 1937 ratio (10.0 percent), which was the lowest in the whole interwar

Table 4—LIQUIDITY POSITION OF SAMPLE B OF LARGE MANUFACTURING CORPORATIONS, 1937-43[a]
(dollar figures in millions)

				Ratio of:	
Year	*Average Cash*[b]	*Average Marketable Securities*[b]	*Estimated Cash Payments*	Cash to Payments[c]	Cash Plus Marketable Securities to Payments[d]
1937	$ 798	$ 304	$11,072	7.2%	10.0%
1938	897	282	8,320	10.8	14.2
1939	1,095	344	8,880	12.3	16.2
1940	1,285	407	9,911	13.0	17.1
1941	1,407	673	13,779	10.2	15.1
1942	1,387	1,075	16,627	8.3	14.8
1943	1,533	1,507	20,401	7.5	14.9

[a] For a description of the sample see Appendix A.

[b] Average of two successive year-end figures.

[c] Ratio of average cash of two successive year ends to total payments in the year between the two dates.

[d] Ratio of average cash plus average marketable securities of two successive year ends to total payments in the year between the two dates.

period.[13] On this basis, it may be said that corporations have actually decreased their liquidity since 1939, but that they have a considerable amount of "excess" liquidity upon which to draw even if they no longer have much "free" cash. If the minimum requirements for liquid funds of corporations are estimated for 1943 by applying to the payments figure for that year the 1937 ratio of cash plus marketable securities to payments, it is found that in 1943 cash plus marketable securities exceeded the minimum requirements by $1,000 million.[14] This amount in excess of minimum needs constitutes, on this basis of comparison, "free" liquid funds in 1943. Since the ratio of liquid funds to payments for 1937 is the lowest of any year in the interwar period, this figure of $1,000 million would have to be regarded as the upper limit for "free" funds in 1943.

However, certain new factors which made themselves felt in 1943 but were absent or less important in 1937 make it more than doubtful that these $1,000 million can be readily considered as "free" funds. These factors are such that they force companies to hold a larger percentage of liquid funds to payments than in prewar years; in other words, it is uncertain what part of this "excess" liquidity is really excess in the sense that companies have free funds above those required to provide liquidity for expected payments. The factors necessitating a higher ratio of liquid funds to payments include the high tax liability in 1943 against which liquid funds must be held; the possibility that retroactive rises of wage rates may be necessary, with which companies have to reckon; the fact that payments by government agencies are often made in the form of an advance of money which can be used only for the execution of the war contracts for which the advance is made; and the probability that concerns will have to make lump sum payments to government agencies as the result of the renegotiation procedures.[15] The most important of these factors is the tax liability, the influence of which will now be discussed in greater detail.

---

[13] Chart 17 shows that the ratio of cash to current liabilities, the ratio of cash plus marketable securities to current liabilities, the "quick" ratio, and the ratio of current assets to current liabilities in 1943 were *below* their 1937 levels, a fact that contrasts sharply wth the result obtained when the liquidity of corporations is measured by the ratio of cash plus marketable securities to total payments. The difference is accounted for by the fact that current liabilities have risen faster than payments since 1937. This in turn is due to the increase in the proportion of current liabilities represented by tax liabilities, which now account for almost one-half of total current liabilities.

[14] The year 1937 recommends itself as a basis for comparison not only because it shows the lowest ratio of cash to payments in the interwar period but also because it was, on the whole, a prosperous year and because it is relatively near to the present.

It may be contended that special account does not have to be taken of tax liabilities, since tax payments are included in our payments figure and liquid funds held against the tax liability are in our figure for cash and marketable securities. This contention is not justified, however. Prudent management considers it necessary to cover all[16] or a large part of tax liabilities in the form of liquid funds; that is, tax liabilities require holdings of liquid funds which are much higher in relation to the payments to which they give rise than are the holdings of liquid funds required to provide for other payments. Then, part or all of the "excess" liquidity calculated on the basis of the 1937 ratio of liquid funds to payments may be actually tied up by the tax liability and is not "excess" at all.

In 1943 the companies in our sample estimated that they owed the government by way of tax liability $1,727 million; they themselves were, on account of their holding of tax notes and government securities, creditors of the government to the extent of approximately $1,800 million.[17] If (on the assumption that companies deem it necessary to cover tax liabilities 100 percent by liquid funds) all taxes as estimated by the companies for 1943 are excluded from our payment figure for this year, and tax liabilities are correspondingly excluded from our figures for liquid funds,[18] and if the average ratio of the remaining liquid funds to the remaining payments is computed, the ratio is found to be 7.7 percent for 1943, a figure lower than the ratio of total liquid funds to total payments in 1937 (10.0 percent). If it is assumed that only 50 percent of tax liabilities has to be covered by liquid funds,[19] the ratio of liquid funds to payments (after deducting 50 percent of the tax liabilities from the figures for liquid funds and the tax liabilities for 1943 from the figure for payments) is 12.0 percent for 1943. While it is true that the 1937 ratio may be too high for purposes of comparison (since the influence of tax liabilities on holdings of liquid funds cannot be eliminated for that year because of the lack of tax liability figures), the error cannot be very large, since the tax liability in 1937 was of minor importance compared with 1943. Taking into account that the ratio of liquid funds to payments in 1937 is the lowest ratio in the interwar period and, furthermore, that other factors, some of which were mentioned above (possibility of retroactive wage rise, advances from the government on special war contracts), tied up additional liquid funds, the 1943 liquid funds do not appear to be more than sufficient to provide the amount of liquidity that prudent management would consider necessary in view of the payments that could reasonably be expected.[20]

---

[15] A war contractor whose profits have been reduced by renegotiation takes credit for the taxes he has already paid. The contractor pays only the net difference between the refund payable to the government agency and the taxes already paid.

[16] Some critics of the first draft of this study pointed out to the author that prudent management considers it necessary to cover tax liabilities 100 percent by liquid funds.

[17] Marketable securities also include nongovernment securities. However, the deductions to be made from marketable securities on this account are of relatively minor importance.

[18] A sum equal to the tax liabilities in the year-end balance sheet of 1942 is deducted from the liquid funds for this same date and correspondingly for the year-end balance sheet for 1943; the average of the remaining liquid funds is related to the payments during 1943 diminished by the tax liabilities as estimated for 1943.

Whether or not an analysis of the medium-sized and small manufacturing corporations will lead to the same result is a point of interest. The data for our sample of these companies are less satisfactory for our purposes than are those for large manufacturing corporations, since figures for medium-sized and small companies are available only to the end of 1942 and holdings of marketable securities are not reported separately in the balance sheet but are included in the item, "investments." Because of these deficiencies of our sample, the following discussion is based on a different sample of the same size-group of corporations, a sample which has the advantage of comprising 832 manufacturing cor-

---

[19] Tax notes alone in 1943 were 41.2 percent of tax liabilities.

[20] There is one factor which in 1943 may have made itself felt in the opposite direction. The turnover of inventories was considerably higher in that year than in 1937. It is true that this situation does not affect the amount of liquid funds required for the transaction purpose proper: Two companies which have the same receipts and expenditures, spread continuously through time, have the same degree of coincidence of receipts and expenditures and therefore need the same amount of liquid funds for the transaction purpose (see Chapter 4, p. 37), no matter what their respective ratios of inventory turnover are. But in so far as the more rapid turnover of inventories signifies a greater liquidity of inventories the companies may consider it possible to get along with a smaller amount of cash or marketable securities held for *precautionary* reasons (see Chapter 4, p. 39). A company may therefore feel justified in reducing the total amount of cash plus marketable securities held to provide for expected and unexpected payments.

Table 5—LIQUIDITY POSITION OF MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS, 1940-43[a]
(dollar figures in millions)

Year	*Year-End Cash Balances*	*Year-End Marketable Securities*	*Annual Sales*	Ratio of: Cash to Sales[b]	Ratio of: Cash Plus Marketable Securities to Sales[c]
1940	$ 71.0	$ 10.2	..	..	..
1941	88.4	20.7	$2,048.2	3.9%	4.6%
1942	146.5	81.0	2,659.2	4.4	6.3
1943	217.9	178.4	3,242.4	5.6	9.6

[a] Sample of 832 corporations, from Board of Governors of the Federal Reserve System.

[b] Ratio of average cash of two successive year ends to total sales in the year between the two dates.

[c] Ratio of average cash plus marketable securities of two successive year ends to total sales in the year between the two dates.

porations.[21] The figures are, however, available only since 1940, which precludes a comparison with prewar years.

Cash holdings of this sample of companies at the end of 1943 were 206 percent above those at the end of 1940 (Table 5). Total means of payment in the same period rose only 60 percent and cash balances of our sample of large manufacturing corporations (sample B) only 16 percent. Thus while the increase in cash holdings of the large corporations lagged considerably behind the increase in the total means of payment, the increase in cash holdings of medium and small corporations far exceeded it. Other samples based on a smaller number of companies in the medium and small size group of corporations also show that the increase in cash for this group is far greater than that of the total means of payment. Exceptionally large accumulations of cash appear to be characteristic of medium-sized and small manufacturing corporations but not of large.

Not only the absolute volume of cash for the medium and small companies but also the ratio of average cash to sales (which are a good substitute for payments) shows a substantial increase. The ratio rose from 3.9 percent in 1941 to 5.6 percent in 1943, in contrast to the group of large corporations whose ratio declined during the same period.

---

[21] Data for the sample were put at the disposal of the Financial Research Program by the courtesy of the Board of Governors of the Federal Reserve System.

If account is taken of marketable securities, the liquidity position of the medium-sized and small corporations appears still more favorable. Marketable securities for this sample of 832 manufacturing corporations increased more than seventeen times between the end of 1940 and 1943. The ratio of average cash plus marketable securities to sales rose from 4.6 percent to 9.6 percent between 1941 and 1943 whereas the corresponding ratio for large manufacturing corporations was lower in 1943 than in 1941 (Table 4). Even if all tax liabilities are deducted from the sales figures (which have to be taken as representing the payment figures for the medium-sized and small group) and also from the figures for liquid funds, the ratio still indicates a definite improvement in the liquidity position of medium-sized and small corporations during the war period.

SUMMARY

(1) The increase in cash of large manufacturing corporations which has taken place since 1939 does not constitute an increase in liquidity since the volume of payments has risen more than cash. Medium-sized and small manufacturing corporations, on the other hand, show a much more rapid increase in cash than in payments. Their cash liquidity, therefore, has increased.

(2) If marketable securities are taken into account, the liquidity of large corporations, as measured by the ratio of cash plus marketable securities to payments, is higher than in 1937. However, this higher ratio does not signify "free" liquid funds, since corporations have to hold larger cash balances for their expected payments than was the case before the war.

(3) The ratio of average cash plus marketable securities to sales of medium-sized and small corporations shows a substantial increase since 1941. Their liquidity position has improved definitely during the war years and is in sharp contrast to that of the large corporations.

• 9 •

SOME OBSERVATIONS ON THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS IN WORLD WAR II

WHILE AN EXHAUSTIVE ANALYSIS of the implications of the present liquidity position of manufacturing corporations is beyond the scope of this study, a few observations are in order, to indicate the economic significance of the results obtained in Chapter 8.

The question that is likely to be raised first concerns the meaning of the absence of a considerable amount of excess liquidity, as shown by our sample of large manufacturing corporations, so far as the problem of reconversion from war to peacetime production is concerned. If the results obtained for our sample are indicative of the situation of all large manufacturing corporations,[1] then it may, at first glance, appear that not much of their cash and marketable securities is free to be spent on reconversion. But this conclusion is not warranted.

First, our analysis merely reveals that in 1943 large corporations did not hold considerably more liquid funds than were required to provide for payments that could be expected at that time. The position in which the corporations will find themselves at the end of the war is quite another matter. Their liquid funds (particularly in the form of government securities) will be higher than they were in 1943. On the other hand, it is doubtful that their payments will increase as much as liquid funds, considering that an expansion of the economic system from the 1943 level can at best be a slow process and that price controls undoubtedly will still present some obstacle to price and wage advances.

---

[1] A comparison through the year 1942 of our sample of large manufacturing corporations with a larger sample of 890 manufacturing corporations, which the Board of Governors of the Federal Reserve System put at the disposal of the Financial Research Program for this purpose, indicates that the larger group shows, on the whole, the same tendency as the smaller sample. For the larger group the figures for the ratio of average cash plus marketable securities to payments from 1937 to 1942 are, in percent, 10.8; 14.7; 15.7; 16.5; 13.7; 14.9. (For similar ratios for sample B, see Chapter 8, Table 4.)

Second, liquid funds may be set free by a reduction of certain kinds of payments against which corporations have to hold particularly high liquid funds. Foremost among them are tax liabilities. A reduction of these liabilities following a reduction of tax rates would release a considerable amount of cash or marketable securities which could be used for reconversion purposes. The same is true for liquid funds held against claims by the government arising out of the renegotiation procedure, or funds held to provide for the possibility of retroactive wage rises. Wage increases are not so likely to occur in the precarious employment situation which may arise immediately after the war.

Third, many companies may expect that during the period of reconversion their revenue from sales will fall off for a period of some months, since sales to consumers can replace sales to the government only after a time lag, the length of which is determined by the time required for reconversion to peace production. During this intermediate period payments for reconversion purposes will have to be made. But although receipts from sales to consumers will not come in immediately to fill the gap created by the decline or cessation of government orders, a corresponding decrease of total receipts will not necessarily occur. Receivables from the government will fall due, and very substantial refunds will be paid to the companies under various provisions of the income and excess profits tax laws. The largest source of funds, however, will be the compensation that corporations will obtain upon war contract termination. They may obtain up to 90 percent of terminated war contracts within a period of thirty days after proper application has been made. In the meantime corporations, because of the funds which they can expect from their claims, may draw on the liquid funds then available even though by so doing they may cause the ratio of liquid funds to payments to fall below the level maintained in 1943.[2]

Fourth, any decline in the volume of payments during the transition period will set free liquid funds which, before the decline, were tied up by the volume of transactions. The volume of payments is not likely to remain so high, per unit of time, during the reconversion period as under war conditions. For instance, General Motors estimates its peak employment during the war at 530,000 persons, but the peak employment after the war at 375,000. This suggests that the decline in payments for this company will be considerable, and that funds will be set free which can be used in the period of transition even if the ratio of liquid funds to payments is not allowed to fall below that maintained in 1943.

---

[2] If the funds from the government come in with a time lag and the corporations in the meantime deplete their liquid funds, part of the funds received from the government must, of course, be used to replete their liquid funds.

Whether that part of marketable securities and cash in the hands of the companies which can be spent on reconversion, together with the funds that they will obtain on war contract termination and under various provisions of the income and profit tax laws, is sufficient to provide for reconversion needs is a question on which a vast literature has arisen.[3] The main purpose of such studies is to find out whether or not corporations will need outside funds from the banks and the capital market. It is not our intention to add an estimate of our own. It will suffice to point out some of the assumptions on which such estimates must be based.

The first assumption concerns the volume of business to which the corporations will reconvert, since the reconversion expenses themselves depend on the level of activity which is assumed after reconversion. Inasmuch as an estimate of reconversion expenses requires the application of the sources and uses of funds analysis, a further assumption has to be made about the structure of the balance sheets of corporations after reconversion, which for the most part can be based only on the structure of prewar balance sheets. Yet in many cases methods of production and even the products themselves will have changed; corporations will not convert backward but forward. Assumptions about the postwar price level, taxes, the present state of fixed equipment, standards of conservative financial practice as reflected in balance sheets, and many other factors enter into such estimates. In view of all these difficulties it is hazardous to try to discover whether corporations will need outside funds for reconversion; the result depends on these basic assumptions, which pave the way for a wide variety of answers.

---

[3] See, for instance, S. Morris Livingston and E. T. Weiler, "Can Business Finance the Transition?" *Survey of Current Business,* February 1944, pp. 9-11; Frederick C. Dirks, "The Rising Liquidity of Manufacturing Companies and Its Implications for Financing Postwar Conversion," *Journal of the American Statistical Association,* June 1944, pp. 207-17; several press releases of the Securities and Exchange Commission (Statistical Series, Release No. 739 and 742); *Federal Reserve Bulletin,* July 1944.

Such estimates as are made apply to the corporate universe. If they could be made accurately, they would indicate whether all corporations *taken as a unit* do need (or do not need) funds from outside. Within the corporate universe there are, of course, great differences between individual companies and industries. Corporations which have to reconvert largely to a different kind of production may be short of funds whereas others, for which the reconversion problem is slight, may have more funds than they need. Even if the funds available for reconversion are sufficient for the corporate universe, many individual companies will need "outside" funds, whereas others can supply such funds because they will have more than they need for their own reconversion. The investigation in the preceding chapter has shown that differences exist with respect to liquid funds (excluding what the corporations will obtain from the government) between such groups as large manufacturing corporations on the one hand and medium-sized and small manufacturing corporations on the other.

In view of the current discussion of the reconversion problem, a point that should be emphasized is that the speed with which conversion to peacetime production can be carried out does not depend on whether the companies have sufficient funds or need to borrow. Borrowed funds are just as good as the corporations' own funds from this point of view. But even the total of liquid funds (including borrowed funds) available for conversion tells us little about the possibilities of a rapid conversion to peacetime production. The rapidity of conversion is mainly (though not entirely) a production problem.

From the point of view of the economic system as a whole, the ease of conversion obviously depends on the quantity of goods and the amount of equipment which can be readily shifted to peacetime production, either within the concerns that possess the goods or by transfer to other concerns that can utilize the materials. Even if all corporations are extremely liquid, it will neverthless be difficult, or even impossible at first, for some of them to obtain the materials and machine parts which they will need. For example, many corporations will have to wait several months while their raw materials are being processed by other corporations. In all probability, some unemployment will exist, since many concerns may not be able to employ their full complement of men while making adaptations in respect to plant and machinery.

Difficulties arise in attempting to obtain any quantitative estimate of the size of the portion of wartime equipment and stocks of goods in factories and warehouses when the war ends, which can be converted to the production of peacetime goods either at once or within a short space of time. Conditions in regard to inventories will vary greatly from industry to industry: some inventories will be nonspecific and will be readily shifted; others, such as ammunition, will be obsolete; and still others, such as substitute materials, will suffer a severe decline in market value even if they do not become obsolete. In many cases the necessary materials will be entirely lacking and stocks will have to be built up again from the beginning.

The conversion of fixed equipment to the production of peacetime goods, on the other hand, does not present so formidable a problem as might appear at first sight. Many of the machines and tools have deliberately been constructed with an eye to "versatility" and can be adapted to other uses by some relatively simple technical adjustment, such as the changing of a part. Moreover, a considerable quantity of old peacetime equipment has only to be taken out of storage and reinstalled. Many concerns expect to be able to make these adjustments within a few months.[4] Again, not all industries will be affected to the same extent. Undoubtedly, excess capacity and obsolescence will be characteristic of some industries, while others will be hampered by a scarcity of equipment because of the suspension of repairs and replacements during the war. The development of new techniques of production, and even of new products for which the future consumer demand cannot now be forecast, adds to the difficulty of predicting the effect of the readjustment on individual industries and concerns.

When the problem is considered from the standpoint of the *individual* corporation, the ease with which the shift can be made will depend first of all on the degree of convertibility of the corporation's physical assets (machines, stocks of raw materials, and goods-in-process) to peacetime production within its own plants. This ease will depend also on the individual corporation's financial liquidity position, which measures ability in money terms to acquire materials and other means of production. The liquidity of individual corporations and their access to bank credit will therefore affect their relative positions[5] in bidding for supplies and other factors of production when the war is over. In this sense the liquidity position (including the access to bank credit of each individual concern) is important. But it remains true that the aggregate of corporate funds (including bank loans) available for reconversion is no measurement of the capacity of the economic system as a whole to accomplish a speedy conversion to peacetime production. Only in so far as the spending of large liquid funds on the part of all corporations (and consumers) may provide the stimulus for the conversion can we attach importance to the total volume of funds (including bank loans) available for reconversion.[6] But the physical condition of the productive apparatus in the economy sets a limit to the speed of reconversion.

---

[4] See, General Motors Corporation, *Annual Report for 1942,* p. 63, and the returns of a questionnaire sent out by the Federal Reserve Bank of Philadelphia.

This last point indicates another problem that arises in connection with the reconversion problem. If corporations draw on their liquid funds in the reconversion period, they will sell marketable securities partly to the banks, which gives rise to new deposits. The same is true if they borrow from the banks. Even if at the close of the war the Treasury were to cease borrowing from the banks[7] and thus stop one source of inflation, the corporate universe (and also consumers), by drawing on its liquid funds or by borrowing from the banks, could open a new one.

It may be contended that the inflationary danger emanating from this source is under the control of the monetary authorities, since they can always prevent the banks from buying additional securities or from lending by keeping reserves down; and that the sale of securities by corporations (and consumers) to investors other than commercial banks do not start inflationary tendencies,[8] because they do not lead to the creation of additional deposits. Therefore, provided the monetary authorities want to prevent inflation, there apparently is no reason to fear it as a result of an attempt of corporations and consumers to liquidate their marketable securities or to borrow from the banks.

---

[5] The advantage of having larger liquid resources than other concerns may be reduced if rationing of materials and machine parts is maintained during the period of readjustment.

[6] For a detailed discussion of the reconversion problem see, A. D. H. Kaplan, *The Liquidation of War Production* (Committee for Economic Development, New York, 1944).

[7] The Treasury will need funds for the purpose of contract termination. But even if it should obtain the money by inflationary borrowing, this borrowing could not be counted fully as an additional source of inflation, since part of the funds may be used by business enterprise to build up its liquidity which will have been lowered by drawing on cash and by selling marketable securities for the purpose of reconversion.

Such reasoning is misleading. Theoretically, the monetary authorities could control the inflationary danger arising from the sale of marketable securities by corporations (and consumers) or from private borrowing. But they could do so only if they were willing to let the prices of government securities fall and to shoulder the responsibility of curbing a stimulus that would otherwise encourage the conversion to peacetime production.

It has been pointed out that the amount of funds that may be absorbed by the postwar conversion process cannot be gauged accurately. Whether corporations will have to make use of bank loans and other funds from outside sources, in addition to liquidating part of their cash and their marketable securities, cannot be estimated now. But if the assumptions are made that the liquid funds in the hands of corporations, together with what they receive from the government, are sufficient for conversion to peacetime production, and that banks will be able to take over the marketable securities liquidated by corporations, it follows that the tendency for large industrial corporations to become more and more independent of commercial banks, which characterized the interwar period, will be strengthened still further.

Our study of cash balances in the thirties shows clearly what the consequence of such a development would be. If enterprises are independent of bank credit,[9] fluctuations in business activity will not lead to variations in bank loans and total deposits; instead they will express themselves in the monetary sphere, by a changing velocity of the circulation of money.[10] In other words, the phenomenon of "free" cash, observed for large corporations in the depression of the thirties, will become the rule for periods of business contraction in the near future. In addition, it is likely that the relative distribution of the total means of payment in a period of depression will change in favor of business enterprises, and in a period of upswing, in favor of consumers.

---

[8] This statement is subject to the qualification that other investors do not purchase these securities with balances formerly held idle.

[9] From the point of view of the economic system as a whole this means that the bulk of bank deposits is based on government securities.

[10] Those who believe that the monetary authority, by an appropriate policy of selling securities to or retiring them from the banks, can avoid business cycles need not accept this conclusion.

SUMMARY

(1) Whether liquid funds already in the possession of corporations together with what they obtain from the government are sufficient for the reconversion of corporations to peacetime production cannot be accurately forecast at the present time.

(2) The speed of reconversion to peacetime production for the economic system as a whole is not only a financial but also a production problem. The physical condition of the production apparatus at the time when reconversion begins on a large scale sets a limit to the speed of reconversion.

(3) If corporations use their liquid funds for reconversion purposes or borrow from the banks, and if consumers liquidate their securities, an inflationary source is likely to be opened up which will be difficult for the monetary authorities to control.

(4) If reconversion to peacetime production can be accomplished without recourse to bank loans, business fluctuations in the immediate future are likely to express themselves in the monetary field by changes in the velocity of circulation of money instead of by changes in bank loans and deposits.

• 10 •

TRADE CORPORATIONS

AN ANALYSIS OF CORPORATE CASH BALANCES for large trade corporations reveals some striking differences from manufacturing corporations and also some similarities. The purpose of the present chapter is to point out these differences and similarities, although the preceding analysis used for manufacturing companies will not be repeated point by point.

The samples of trade corporations, on which the following discussion is based, are small[1] and, therefore, no generalizations of the conclusions of this chapter are permissible. However, when the results obtained are similar for both trade and manufacturing corporations, the presumption seems warranted that these results are due to forces in the economic system which affect various types of enterprise in the same fashion, no matter what line of activity may be carried on by an enterprise.

INTERWAR PERIOD

A comparison of average cash balances and payments of the samples of large trade corporations with corresponding series for samples of large manufacturing corporations reveals conspicuous differences between the two groups.

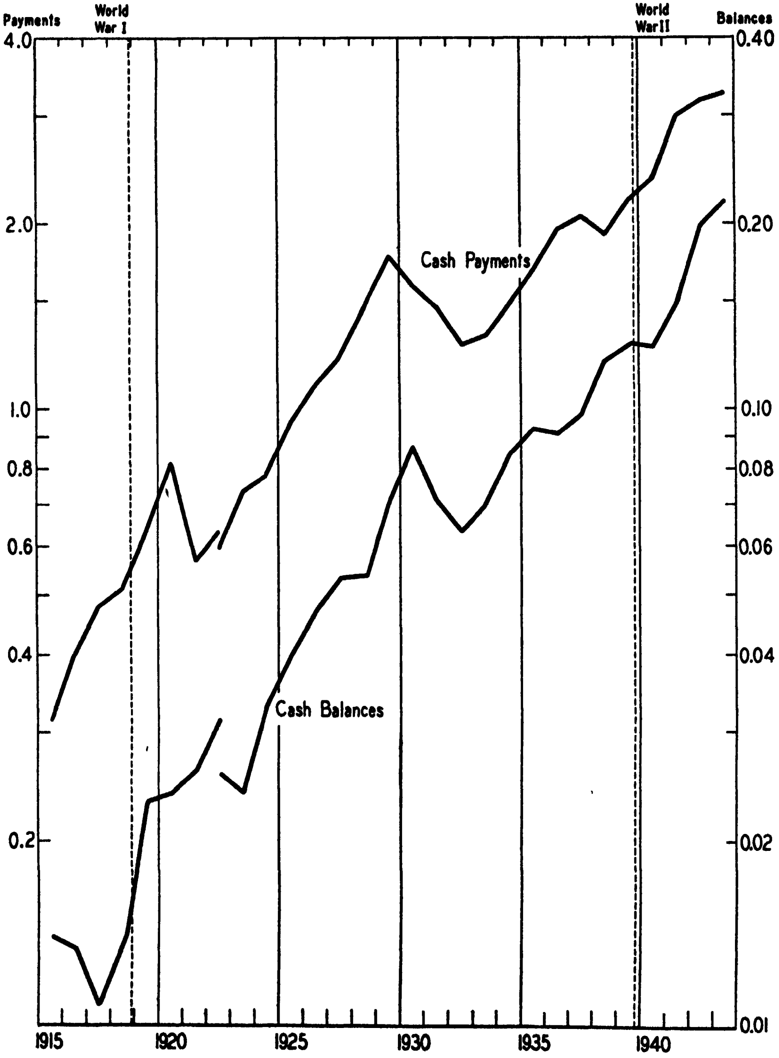
In the period between the two World Wars, the large trade corporations of our sample grew more rapidly than the large manufacturing corporations, a fact which is reflected in the trends of both cash balances and payments. The trends of these series for the trade companies rise more sharply than those for large manufacturing corporations. (Compare Chart 19 and Chart 10.)

The two curves for large trade corporations, although they do not show the same direction of movement year by year, show a greater degree of parallelism than the corresponding curves for manufacturing corporations. In particular the depression of 1930-33 is reflected in a decline not only in the payments figures of the

---

[1] For a description of these samples see Appendix A.

Chart 19—ESTIMATED ANNUAL CASH PAYMENTS AND AVERAGE CASH BALANCES OF SAMPLES OF LARGE TRADE CORPORATIONS



The trends of both cash balances and payments indicate that large trade corporations grew more rapidly than large manufacturing corporations in the period between the two World Wars.

large trade corporations (which had begun in 1929) but also in the cash balances of these companies; the cash balances of large manufacturing corporations, on the other hand, rose somewhat above the level of 1929.

The upward trend of the cash balances of large trade corporations is steeper than that of payments; this is also true for manufacturing corporations in the interwar period but there is a marked difference of degree between the two groups in this respect. For large trade corporations the upward trend of the ratio of cash to payments is steeper than that for manufacturing companies. (See Chart 20 and Chart 11.) In the case of the latter group it may even be doubtful that one should speak of a rising trend at all (although a straight trend line fitted mathematically to the curve representing the ratio of cash to payments for large manufacturing corporations would have a positive slope), since the ratio of cash to payments in the expansion year 1937 shows a definite tendency to return to the level of the twenties. But there can be no doubt about the rising trend of the ratio of cash to payments for large trade corporations.

The reason for the rising trend of the ratio for large trade companies cannot be definitely established on the basis of the available material; very likely it is connected with the rapid growth of the companies included in the sample. In this connection it is significant that the ratio for our sample of small trade corporations, which did not undergo a similar rapid growth, does not display any upward trend. But why this rapid growth of large trade corporations should bring about a rising trend in the ratio of cash to payments is not self-evident. Without further information about the form in which this growth took place[2] and the changes in the habit of payments which may have accompanied it,[3] a definite answer cannot be given.

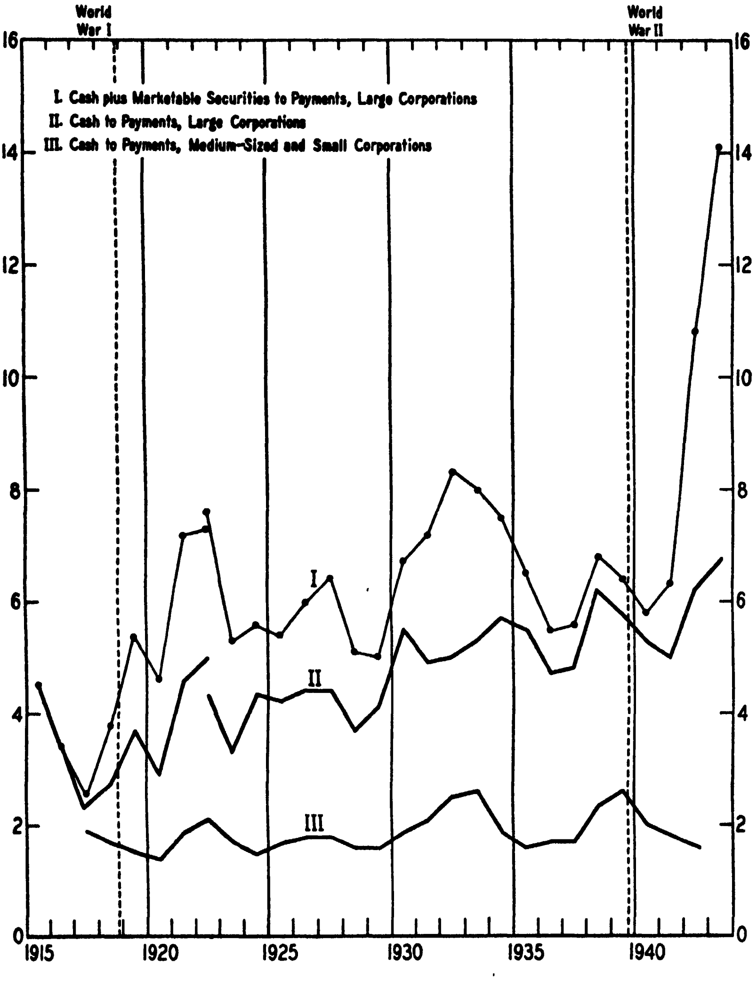
When the cyclical movement of the ratio is examined, conspicuous differences between large manufacturing and large trade cor-

---

[2] New chain stores, for instance, may require quite different ratios of cash to payments according to their geographical locations, e.g., whether they are located in agricultural or industrial districts.

[3] The growth of department stores may, for instance, have been accompanied by a growing habit of placing large single orders, which lead to large lump-sum payments. The latter necessitate a higher ratio of cash balances to payments of the companies concerned. (See the discussion in Chapter 4.)

Chart 20—LIQUIDITY RATIOS OF SAMPLES OF TRADE CORPORATIONS



porations are again found. The ratio for the latter group in the thirties does not show the inverse cyclical pattern displayed by manufacturing corporations; for large trade corporations the ratio does not show a marked rise after 1930. If the trend of the ratio were used as a basis for calculating "free" cash, following the method described for manufacturing companies,[4] "free" cash would appear in 1930 just as in the case of large manufacturing corporations, but in contrast to the latter it would decline in 1931 and rise again from 1932 to 1934. From then on through 1938 the "free" cash of trade corporations would show the same movement as that of manufacturing corporations — decreasing during expansion and increasing during contraction.

---

[4] See Chapter 4, pp. 40-41.

If marketable securities are taken into account, these differences between large trade and large manufacturing corporations disappear, to a great extent. First of all, the trend of the ratio of cash plus marketable securities to payments of large trade corporations for the period from 1921 to 1939 is approximately horizontal; in addition, the cyclical pattern of the ratio between 1929 and 1938 is the same as that for large manufacturing corporations.[5] From these comparisons it follows that the main difference between the two groups is in the distribution of their liquid funds between cash and marketable securities. In particular, large trade corporations bought marketable securities in 1931 on a relatively larger scale[6] than the manufacturing corporations. The appearance of "free" liquid funds in 1930, their decline during the upswing after 1933, and their sharp rise in the recession year of 1938 are therefore common to both groups.

The reasons for the fluctuations in "free" funds are the same for both groups. The trade companies liquidated "operating" assets (mainly inventories) during 1930-33, and thereby increased their cash holdings or marketable securities; some of these additional liquid funds were used to pay a substantial part of their bank debts, but since the large trade corporations were not greatly indebted to banks around 1929, this outlet did not absorb all the surplus liquid funds, just as in the case of large manufacturing corporations. Nor did the excess of dividend payments over current earnings or the retirement of long-term debt amount to a large sum in the contraction years 1930-33.[7] In 1938 a relatively small liquidation of operating assets added to the liquid funds. These funds could not be used to reduce bank debts, since such debts of large trade corporations had practically disappeared at that time. Earnings were higher than dividend payments and there was even a small increase in long-term funds from outside. On the other hand current operating expenses declined. All this resulted in a rise in the ratio of liquid funds to payments in that year.

---

[5] The only difference is that the lowest ratio for large trade corporations is reached in 1936 and for large manufacturing corporations in 1937.

[6] They more than doubled their holdings of marketable securities in this one year.

[7] The trade companies never experienced actual losses. Their dividend payments were somewhat greater than their current earnings in 1930 and 1932. Long-term debts were retired in 1932 and 1933 by not quite $4 million.

It should be mentioned that the depression of 1921 also brought about a sharp rise in the ratio of liquid funds to payments for large trade corporations, which was followed by an almost equally sharp decline in 1923. The year 1921 (and to a much smaller extent 1922) was a year of selling out of inventories. Although the bulk of the funds released in this way were used to reduce bank debts, the latter did not absorb all of the funds. This together with the decline in operating expenses is mainly responsible for the movement of the ratio of liquid funds to payments in the recession of 1921.

The ratio of cash to payments for medium-sized and small trade corporations shows relatively small variations in the period between the two World Wars; they are even smaller than those of the corresponding group of manufacturing corporations. "Free" cash is therefore of minor importance in the case of this size group of corporations, no matter whether they are engaged in trade or manufacturing. The reasons are similar for both groups of companies.[8]

WORLD WAR I

The percentage increase that occurred between the end of 1914 and the end of 1918 in the cash balances of the large trade corporations of sample B (see Table D-4, Appendix D) was less than that for large manufacturing corporations and for total means of payment. Since payments of large trade corporations increased at a more rapid rate than their cash balances, the ratio of average cash to payments is found to have been less at the end of the war than at the beginning (Table 6). This, in contrast to the manufacturing corporations, is also true if marketable securities are taken into account, although the companies of sample B began to buy marketable securities in 1917 and continued their

---

[8] Since "permanent investments" and marketable securities are not given separately in the balance sheet, the ratio of "liquid" funds to payments cannot be computed for these companies.

Table 6—LIQUIDITY POSITION OF SAMPLE B OF LARGE TRADE CORPORATIONS, 1915-22[a]
(dollar figures in millions)

				Ratio of:	
Year	*Average Cash*[b]	*Average Marketable Securities*[b]	*Estimated Cash Payments*	Cash to Payments[c]	Cash Plus Marketable Securities to Payments[d]
1915	$14.0	..	$311.7	4.5%	4.5%
1916	13.4	..	398.6	3.4	3.4
1917	10.8	$ 1.4	479.6	2.3	2.6
1918	13.9	5.8	514.7	2.7	3.8
1919	23.1	11.3	631.8	3.7	5.4
1920	23.9	13.8	819.1	2.9	4.6
1921	26.0	15.0	568.1	4.6	7.2
1922	31.5	15.2	634.3	5.0	7.4

[a] For a description of the sample see Appendix A.

[b] Average of two successive year-end figures.

[c] Ratio of average cash of two successive year ends to total payments in the year between the two dates.

[d] Ratio of average cash plus average marketable securities of two successive year ends to total payments in the year between the two dates.

purchases on a larger scale in 1918. The postwar inventory boom of 1920 therefore could not be financed by drawing on excess liquid funds; instead, the corporations had to rely on bank credit. Their notes payable rose in the one year, 1920, by $46.1 million or 233 percent. The ratios of cash and of cash plus marketable securities to payments which the companies maintained in the years 1916-18 were the lowest in the whole period of 1915-43.

For the medium-sized and small trade corporations (for which balance sheet figures are available only since the end of 1916) the ratio of cash to payments fell slightly between 1917 and 1918. If the item "investments" is included on the assumption that the larger part of the increase during the two last years of the war consisted of marketable securities, the ratio of liquid funds to payments is found to have risen only slightly (from 2.3 percent in 1917 to 2.9 percent in 1918). This ratio in the postwar period was never allowed to fall below 2.7 percent, which justifies the conclusion that this group of corporations also emerged from World War I without any excess liquidity.

WORLD WAR II

The liquidity position of large trade companies in World War II is different from that of large manufacturing corporations. Cash balances rose by 76 percent from 1939 to 1943, compared with an increase of 78 percent for total means of payment and a rise of 47 percent for the cash of large manufacturing corporations. Marketable securities show a much steeper increase, multiplying almost 19 times in the same period; the marketable securities of large manufacturing corporations multiplied only four and a half times. The result is that the ratio of liquid funds to payments for large trade companies reached 14.1 percent in 1943, compared with only 5.6 percent in 1937 (Table 7). Even if allowance is made for the fact that increased tax liabilities require increased liquidity, large trade companies in 1943 were much more liquid than in 1937. (The ratio of cash plus marketable securities to payments after deducting tax liabilities from both the numerator and denominator for 1943 is 8 percent.) A sources and uses of funds analysis of the sample of large trade corporations reveals that the main reason for the difference in the liquidity of large

Table 7—Liquidity Position of Sample A of Large Trade Corporations, 1937-43[a] (*dollar figures in millions*)

Year	*Average Cash*[b]	*Average Marketable Securities*[b]	*Estimated Cash Payments*	Ratio of: Cash to Payments[c]	Ratio of: Cash Plus Marketable Securities to Payments[d]
1937	$ 98.7	$ 15.2	$2,045.7	4.8%	5.6%
1938	119.7	11.8	1,921.0	6.2	6.8
1939	127.4	12.1	2,191.1	5.8	6.4
1940	126.1	10.6	2,376.3	5.3	5.8
1941	148.9	40.2	2,996.3	5.0	6.3
1942	197.9	145.1	3,166.9	6.2	10.8
1943	217.9	239.8	3,251.4	6.7	14.1

[a] For a description of the sample see Appendix A.

[b] Average of two successive year-end figures.

[c] Ratio of average cash of two successive year ends to total payments in the year between the two dates.

[d] Ratio of average cash plus average marketable securities of two successive year ends to total payments in the year between the two dates.

trade and large manufacturing corporations is that the trade companies, which are engaged in the distribution of consumer goods, have liquidated their receivables since 1941; in addition their equipment (including land, building, and merchandising equipment) in the years 1942 and 1943 declined, which also resulted in an inflow of cash. These factors together with others that are quantitatively less important increased the liquid funds which had to be held either as cash or in the form of marketable securities.

Although trade companies are not faced with a reconversion problem in the sense of shifting to fundamentally different activities, they will find themselves at the end of the war with inferior goods which will be difficult to sell. They will have to stock up again with "peacetime" commodities, using their excess liquid funds to finance the building up of these new inventories. In addition, equipment which was run-down during the war will have to be replaced and receivables will be built up again. No general statement can be ventured as to whether their excess funds are sufficient for these purposes or whether outside financing will be required.

Our sample of medium-sized and small trade corporations has the same defects for an analysis of the present war period as the sample for the corresponding size group of manufacturing corporations; that is, the latest figures are those for 1942, and marketable securities are not available separately but are included in the item "investments," which comprises both permanent investments and marketable securities. For this size group, however, a sample of 634 corporations is available for the period 1940-43.[9] This sample shows an increase of 171 percent in cash between the end of 1940 and the close of 1943; marketable securities in the same period multiplied 20 times. The ratio of average cash plus marketable securities to sales (which have to be taken as a substitute for payments) rose from 2.4 percent in 1941 to 5.9 percent in 1943. Even if tax liabilities are deducted from the numerator and the denominator, the ratio still shows a substantial increase. This size group, like the large trade corporations, has improved its liquidity position. The difference observed in the development of the liquidity position of medium-sized and small and of large manufacturing corporations does not exist between the corresponding size groups of trade corporations.

---

[9] Data compiled by the Board of Governors of the Federal Reserve System, who have courteously allowed their use in this study.

SUMMARY

(1) In the interwar period the trend of cash balances of large trade corporations is steeper than the trend of their payments. This results in a rising trend of the ratio of cash to payments. The ratio of cash plus marketable securities to payments does not show a corresponding upward trend in this period.

(2) "Free" cash of large trade companies does not display the same movement as "free" cash of large manufacturing corporations. But in the thirties "free" liquid funds (cash plus marketable securities) show on the whole the same movement as "free" liquid funds for large manufacturing corporations, and for substantially the same reasons.

(3) At the close of World War I the large trade corporations, in contrast to manufacturing corporations, were less liquid than at the beginning of the war. Medium-sized and small corporations also emerged from World War I without any excess liquidity.

(4) In World War II the large trade companies, unlike large manufacturing companies, have built up an "excess" liquidity, mainly in the form of marketable securities. This is due primarily to the fact that they liquidated their receivables on a large scale. Medium-sized and small companies also have improved their liquidity position.

APPENDIX A

DESCRIPTION OF SAMPLES

I. Large Manufacturing Corporations

Sample A. For the period 1914-22 sample A covers 81 large manufacturing corporations, the assets of which amounted to about 25 percent of the total assets of all reporting large manufacturing corporations, i.e., companies with total assets of $5 million and over. This sample was used in *The Effect of War on Business Financing: Manufacturing and Trade, World War I,* by Charles H. Schmidt and Ralph A. Young (National Bureau of Economic Research, Financial Research Program, 1943) and is described there in Appendix A.

For the period 1922-43 sample A covers 78 large manufacturing companies. It includes all of the companies used by Albert R. Koch in *The Financing of Large Corporations, 1920-39* (National Bureau of Economic Research, Financial Research Program, 1943), with the exception of six rubber companies. A description of this sample and a list of the companies included is found in Koch's study (pp. 11-15 and Appendix A). The omission of the rubber companies in the present study was necessary in order to link this sample with the sample of corporations for the period 1914-22, which excludes rubber companies. The link between the cash balance figures for these two samples has been effected by the use of the data for 1922; the 1922 figure of the early sample has been related to that of the later sample. Therefore, for the period 1914-21 the cash balance figures thus obtained bear the same relationship to the original figures as the figures for the 81 corporations bear to those of the 78 corporations in 1922.

Sample B. Of the 81 companies included in sample A for 1914-22, 31 reported sales figures. Of the 78 companies included in sample A for 1922 and subsequent years, 46 reported sales figures through 1925. In 1926 the number dropped to 45 because of the consolidation of Associated Oil Company and Tide Water Oil Company; and in 1943 the number was reduced to 44, when the Yellow Truck and Coach Manufacturing Company merged with General Motors Corporation. The sample containing only the companies that report sales figures is designated as sample B. The figures of the groups of 31 and 46 companies have been linked according to the method described above under *Sample A.*

A list of the companies included in sample B for the period 1922-43, on which most of the analysis of this study is based, may be found at the end of this Appendix.

Sample C. Whenever absolute figures are important in the analysis of changes in the period 1914-22, the figures for the 31 companies are used.

(See the discussion of World War I in Chapter 7.) These 31 companies are designated as sample C.

II. MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS

The sample includes 73 manufacturing corporations having total assets of between $50 thousand and $5 million. The data, which cover the period 1916-42, were transcribed from corporate income tax returns in the files of the Wisconsin State Tax Commission.

III. LARGE TRADE CORPORATIONS

Sample A. For the period 1921-43 our sample of large trade companies, all of which are mass distributors, includes corporations representing mail order houses (2), chain stores (6), and department stores (1). A list of the companies included in this sample may be found at the end of this Appendix.

Sample B. The sample for the years 1914-22 comprises 6 companies, also mass distributors, listed at the end of this Appendix: mail order houses (2), chain stores (3), and department stores (1).

IV. MEDIUM-SIZED AND SMALL TRADE CORPORATIONS

The sample of medium-sized and small corporations includes 30 companies for the years 1916-42. The data were transcribed from corporate income tax returns in the files of the Wisconsin State Tax Comission.

LARGE MANUFACTURING CORPORATIONS REPORTING SALES DATA—SAMPLE B

Agricultural Machinery
- Allis-Chalmers Mfg. Co.
- International Harvester Co.
- J. I. Case Threshing Machine Co.

Automobiles
- General Motors Corp.
- Mack Trucks, Inc.
- Packard Motor Car Co.
- White Motor Co.
- Yellow Truck & Coach Mfg. Co. (merged with General Motors Corp. in 1943)

Building Materials
- Johns-Manville Corp.
- Lone Star Cement Corp.

Chemicals
- Air Reduction Co., Inc.
- Columbian Carbon Co.
- E. I. Du Pont de Nemours & Co.
- Monsanto Chemical Co.

Iron and Steel
- American Rolling Mill Co.
- Bethlehem Steel Corp.
- Inland Steel Co.
- U. S. Steel Corp.
- Wheeling Steel Corp.
- Youngstown Sheet and Tube Co.

Food
- Corn Products Refining Co.

Industrial Machinery
- American Steel Foundries
- Fairbanks, Morse & Co.
- General Electric Co.
- National Cash Register Co.

Meat Packing
- Armour & Co.
- Cudahy Packing Co.
- Swift & Co.

Petroleum
- Associated Oil Co. (merged with Tide Water Oil Co. in 1926)
- Atlantic Refining Co.
- Continental Oil Co.
- Gulf Oil Corp.
- Pure Oil Co.
- Standard Oil Co. (New Jersey)
- Tide Water Oil Co. (merged with Associated Oil Co. in 1926)
- Union Oil Co. of Calif.

Textiles
- American Manufacturing Co.
- Arlington Mills
- Mt. Vernon-Woodbury Mills, Inc.
- Nashua Manufacturing Co.
- Pacific Mills

Tobacco
- American Tobacco Co.
- Liggett & Myers Tobacco Co.
- P. Lorillard Co.
- R. J. Reynolds Tobacco Co.

Transportation Equipment
- Baldwin Locomotive Works

LARGE TRADE CORPORATIONS
SAMPLE A

Chain Stores
- First National Stores
- Grant (W. T.) Co.
- Kresge (S. S.) Co.
- Kress (S. H.) Co.
- Kroger Grocery & Baking Co.
- Penney (J. C.) Co.

Mail Order Houses
- Montgomery Ward & Co.
- Sears, Roebuck & Co.

Department Stores
- May Department Stores

SAMPLE B

Chain Stores
- Butler Brothers
- Kresge (S. S.) Co.
- Woolworth (F. W.) Co.

Mail Order Houses
- Montgomery Ward & Co.
- Sears, Roebuck & Co.

Department Stores
- May Department Stores

APPENDIX B

INFLOW AND OUTFLOW OF CORPORATE FUNDS

IN CHART B-1 are shown the absorption and release of cash by the components of what we call "operating assets"—receivables, inventory, and fixed property. The great sensitivity of receivables and inventory to business fluctuations is striking. The slight recession of 1927 is shown very clearly by a decline of both items. It is also worth noting that, after the depressions of 1921 and the early thirties, inventory begins to rise before receivables. The greater part of the increase in receivables in World War II represents sums owed by the government.

Fixed property does not decline immediately when a depression sets in. If the depression is short lived, either no decline at all takes place (as in 1921) or the decline occurs when business is again on the upswing (1939). The years of World War II show only a moderate expansion of fixed property. The explanation, of course, is that plants financed and owned by the government are not shown in the balance sheets.

Chart B-2 shows the changes in "funds from outside," net income, and dividends. The depression years, except 1938, are clearly characterized by a decline in financing from outside. But in some of the good years also (1924, 1929), a decrease occurs. The decrease in 1924 is accounted for by the sharp reduction in bank debts, which more than offset the increase of the other items included in "funds from outside." The reduction in bank debts occurred throughout the twenties but, as a rule, it was smaller than the increase in the other items. In 1929, a great reduction took place in long-term debts. Although a simultaneous increase in the issue of new stock indicates that long-term debts were simply replaced by common stock in that year, a slight decrease in "funds from outside" resulted from these transactions. It should be remembered that funds from outside include tax liabilities, which account largely for the increase during the years of World War II.

Although net income clearly reflects general business conditions, it is negative only in the year 1932. But, if cash dividends are taken into account, net income after dividends is found to be negative in the years 1921, 1931-33.

Chart B-1—ABSORPTION AND RELEASE OF FUNDS, BY MAJOR ASSET ITEMS, OF SAMPLES OF LARGE MANUFACTURING CORPORATIONS

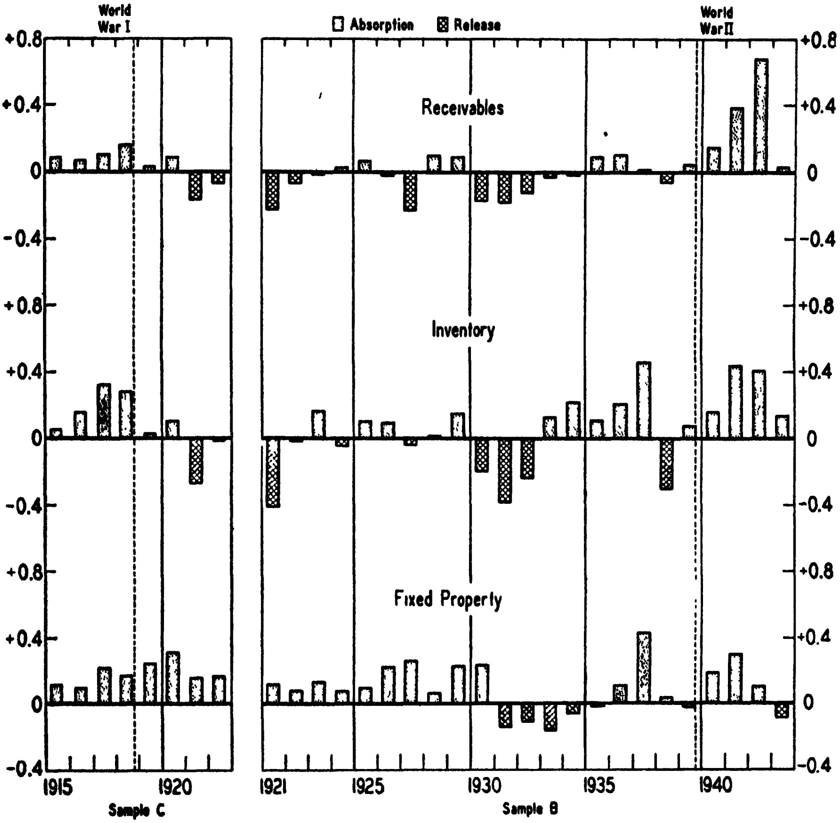
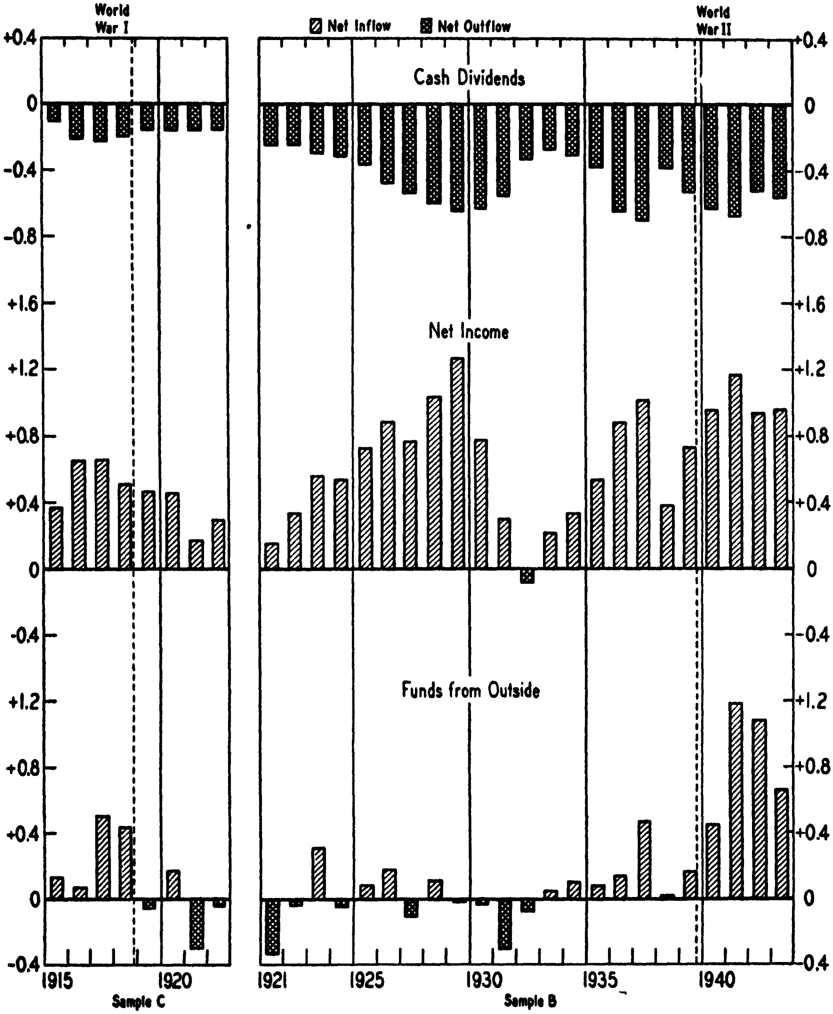


Chart B-2—CHANGES IN CASH DIVIDENDS, NET INCOME, AND FUNDS FROM OUTSIDE OF SAMPLES OF LARGE MANUFACTURING CORPORATIONS



APPENDIX C

I. OPERATING EXPENDITURES

The estimate of operating expenditures is arrived at as follows: First, net profit (i.e., net income after taxes) from the year's operations is deducted from the year's sales figure or net loss is added to the sales figure. This gives a figure for what may be called "unadjusted operating expenditures." The next step is to adjust this figure in four ways:

1. A *decrease* in inventories during the year is subtracted from "unadjusted operating expenditures," since such a decrease swells the sales figure but does not lead to operating expenditures.
2. An *increase* in inventories, on the other hand, implies operating expenditures without being reflected in the sales figure. It, therefore, is added to the figure for "unadjusted operating expenditures."
3. Deductions are made for funds which, though charged to expenses for the year, do not lead to actual cash outlays during the year. In this group are included:
   a. Increases in accounts payable and "other current liabilities" (excluding notes payable which represent bank debts)
   b. Depreciation (which may, or may not, have been spent for replacement of equipment, but if it was so spent is allowed for under "gross property expenditures" below), depletion and amortization of deferred charges
   c. Other noncash charges to income such as losses on the sale of fixed assets.
4. Finally, operating expenditures charged not against the year's income but against contingency or other reserve accounts are added.

The figure obtained after these four corrections of "unadjusted operating expenditures" are made constitutes the "operating expenditures" figure used in this study.

II. NONOPERATING EXPENDITURES

This item consists of

1. Cash dividends
2. Gross fixed property expenditures
3. Increases in marketable securities and in investments
4. Decreases in current liabilities
5. Retirement of long-term debt and stock.

III. CASH PAYMENTS

Total cash payments is the sum of I and II. The figure arrived at in this manner is, obviously, only an approximation of the actual figure for cash payments, since for balance sheet items only the net change between one year end and the next is known. For example, if a certain quantity of marketable securities is bought and resold within the year, no trace of the buying transaction is left in the balance sheet at the end of the year. The same holds true for purchases and sales of fixed assets and investments, and for the items on the liability side. For the sample of medium-sized and small manufacturing corporations, notes payable could not be separated out. While this leads to an additional inaccuracy in our payment figures for this sample, it is of negligible proportions.

IV. CASH RECEIPTS FROM SALES

Cash receipts from sales are obtained by subtracting from the sales figure an increase in receivables, or by adding to it a decrease in receivables.

V. OTHER CASH RECEIPTS

This item is the sum of an increase in "notes payable" and an increase in stocks and bonds, minus the sum of a decrease in investments and a decrease in marketable securities.

VI. TOTAL CASH RECEIPTS

Total cash receipts are the sum of items IV and V.

APPENDIX D

Table D-1—YEAR-END FIGURES FOR TOTAL MEANS OF PAYMENT AND CORPORATE CASH BALANCES
(*in millions*)

Year	Total Means of Payment[a] (1)	Cash Balances[b]	
		All Reporting Nonfinancial Corporations (2)	*All Reporting Manufacturing Corporations* (3)
1914	$20,300	..	..
1915	22,398	..	..
1916	25,741	..	..
1917	28,589	..	..
1918	32,249	..	..
1919	37,098	..	..
1920	38,464	..	..
1921	38,101	..	..
1922	40,624	..	..
1923	43,249	..	..
1924	46,826	..	..
1925	49,981	..	..
1926	50,876	$6,534	$3,146
1927	53,802	6,633	3,143
1928	55,355	7,138	3,473
1929	54,555	7,349	3,430
1930	53,248	7,260	3,531
1931	47,861	6,041	3,084
1932	44,854	5,894	2,981
1933	41,532	5,566	2,750
1934	46,270	6,259	3,006
1935	51,273	6,679	3,389
1936	56,360	7,230	3,522
1937	55,815	6,661	3,282
1938	58,066	7,660	4,003
1939	63,253	8,537	4,570
1940	70,008	10,320	5,744
1941	76,336	11,195	6,149
1942	91,299	..	..
1943	112,388	..	..

[a] Demand and time deposits, excluding government deposits, of all banks (including savings banks) plus currency in circulation outside banks. For 1914-22 data are averages of June figures. From *Banking and Monetary Statistics* (Board of Governors of Federal Reserve System, 1943) p. 34 and *Federal Reserve Bulletin.*

[b] From United States Treasury Department, Bureau of Internal Revenue, *Statistics of Income,* annually.

Table D-2—SELECTED FINANCIAL DATA FOR SAMPLES OF LARGE MANUFACTURING CORPORATIONS
(*in millions*)

Year	*Sample A*[a]	*Sample B*[a]				
	Year-End Cash Balances (1)	Year-End Cash Balances (2)	Year-End Marketable Securities (3)	Annual Cash Receipts[b]		
				Total (4)	*From Sales* (5)	*"Other"* (6)
1914	$284	$191	$34	...	...	...
1915	383	258	153	$3,136	$2,981	$155
1916	545	401	275	4,676	4,546	130
1917	674	480	600	6,034	5,678	356
1918	704	505	709	7,932	7,398	534
1919	697	501	470	8,217	7,446	771
1920	628	447	412	8,181	7,496	685
1921	610	399	413	5,497	5,243	254
1922	636	435	404	5,642	5,355	287
1923	703	476	401	7,362	6,926	436
1924	786	523	413	6,761	6,592	169
1925	867	576	433	8,362	8,113	249
1926	905	598	629	9,541	9,190	351
1927	989	653	614	9,696	9,242	454
1928	1,141	717	814	9,677	9,472	205
1929	1,049	634	654	11,302	10,401	901
1930	1,153	809	543	9,589	9,115	474
1931	1,013	755	616	7,213	7,006	207
1932	1,152	867	413	5,602	5,155	447
1933	989	724	530	5,089	4,983	106
1934	1,060	738	476	6,554	6,270	284
1935	1,242	868	388	7,684	7,380	304
1936	1,215	854	328	9,177	8,838	339
1937	1,063	742	280	10,955	10,291	664
1938	1,524	1,051	284	8,641	8,225	416
1939	1,701	1,131	403	8,989	8,887	102
1940	2,115	1,440	411	10,240	10,021	219
1941	1,979	1,373	935	13,813	13,426	387
1942	2,051	1,401	1,216	16,693	16,001	692
1943	2,502	1,665	1,798	20,809	20,338	471

[a] For description of sample see Appendix A.
[b] For description of method of estimating data see Appendix C.

Table D-2 (continued)—SELECTED FINANCIAL DATA FOR SAMPLES OF LARGE MANUFACTURING CORPORATIONS
(in millions)

Year	*Sample B*[a]				
	Annual Cash Payments[b]				
	Total (7)	*For Operating Ependitures* (8)	*For Nonoperating Expenditures* (9)	Transaction Cash[c] (10)	"Free" Cash[c] (11)
1914	...	...	...	...	...
1915	$3,095	$2,507	$588	$206	$16
1916	4,564	3,812	752	304	22
1917	5,943	4,813	1,130	397	39
1918	7,917	6,896	1,021	527	−40
1919	8,213	6,694	1,519	553	−56
1920	8,180	6,927	1,253	545	−76
1921	5,565	4,338	1,227	372	46
1922	5,631	4,672	959	375	38
1923	7,313	6,211	1,102	487	−35
1924	6,710	5,719	991	447	52
1925	8,315	7,106	1,209	554	− 5
1926	9,510	7,945	1,565	633	−48
1927	9,627	7,810	1,817	641	−16
1928	9,604	8,020	1,584	640	45
1929	11,340	8,848	2,492	755	−79
1930	9,431	7,567	1,864	628	95
1931	7,276	5,709	1,567	485	297
1932	5,475	4,477	998	365	446
1933	5,231	4,396	835	348	447
1934	6,550	5,666	884	436	295
1935	7,557	6,485	1,072	503	299
1936	9,187	7,643	1,544	612	249
1937	11,072	9,150	1,922	738	61
1938	8,320	7,001	1,319	554	342
1939	8,881	7,566	1,315	592	504
1940	9,911	8,412	1,499	659	631
1941	13,778	11,621	2,157	918	488
1942	16,628	14,557	2,071	1,108	278
1943	20,400	18,147	2,253	1,359	175

---

[a] For description of sample see Appendix A.

[b] For description of method of estimating data see Appendix C.

[c] For description of method of estimating data see pages 40-41.

Table D-2 (continued)—SELECTED FINANCIAL DATA FOR SAMPLES OF LARGE MANUFACTURING CORPORATIONS (*in millions*)

Year	*Sample B*[a]					
	Liquid Funds for Transaction Purpose[b] (12)	"Free" Liquid Funds[b] (13)	Changes in Total Funds[c] (14)	Net Income (15)	Cash Dividends (16)	Changes in Funds from Outside (17)
1914	...	...	...	...	...	...
1915	$ 399	$–69	...	...	...	...
1916	589	–37	...	...	...	...
1917	767	103	...	...	...	...
1918	1,021	95	...	...	...	...
1919	1,060	13	...	...	...	...
1920	1,055	–145	...	...	...	...
1921	718	111	$ –419	$159	$248	$ –330
1922	726	93	53	334	248	–33
1923	943	–86	572	558	300	314
1924	866	41	178	539	316	–45
1925	1,073	–100	439	728	369	80
1926	1,227	–109	588	885	472	175
1927	1,242	5	120	769	538	–111
1928	1,239	160	551	1,036	594	109
1929	1,463	–54	594	1,266	654	–18
1930	1,217	103	112	774	631	–31
1931	939	423	–560	300	556	–304
1932	706	619	–486	–77	333	–76
1933	675	592	–5	219	268	44
1934	845	389	122	335	307	94
1935	975	260	215	530	379	64
1936	1,185	34	363	877	650	136
1937	1,428	–326	774	1,014	707	467
1938	1,073	105	19	382	381	18
1939	1,146	289	366	728	531	169
1940	1,279	414	771	958	631	444
1941	1,776	303	1,682	1,172	674	1,184
1942	2,145	317	1,506	938	519	1,087
1943	2,632	409	1,065	966	561	660

[a] For description of sample see Appendix A.

[b] For method of estimating data see page 49.

[c] Equity (adjusted) plus debt. Column 15 plus 17 minus 16.

Table D-2 (*continued*)—SELECTED FINANCIAL DATA FOR SAMPLES OF LARGE MANUFACTURING CORPORATIONS (*in millions*)

Year	*Sample B*[a]				
	Absorption or Release of Funds by Major Asset Classes[b]				
	Operating Assets (18)	*Fixed Property* (19)	*Inventory* (20)	*Receivables* (21)	*"Other" Assets*[c] (22)
1914	...	...	...	...	...
1915	...	...	...	...	...
1916	...	...	...	...	...
1917	...	...	...	...	...
1918	...	...	...	...	...
1919	...	...	...	...	...
1920	...	...	...	...	...
1921	$–512	$116	$–407	$–221	$ 84
1922	–6	77	–17	–66	38
1923	288	127	162	–1	245
1924	59	77	–42	24	61
1925	262	92	101	69	109
1926	288	216	91	–19	93
1927	–7	258	–40	–225	90
1928	175	64	14	97	107
1929	468	227	149	92	375
1930	–120	235	–191	–164	172
1931	–705	–142	–379	–184	112
1932	–454	–103	–229	–122	58
1933	–61	–164	130	–27	82
1934	152	–54	219	–13	11
1935	186	–17	108	95	–3
1936	414	105	203	106	29
1937	898	426	453	19	31
1938	–327	33	–303	–57	33
1939	101	–21	76	46	26
1940	480	184	152	144	–28
1941	1,116	293	438	385	108
1942	1,187	101	404	682	–8
1943	82	–81	135	28	128

---

[a] For description of sample see Appendix A.

[b] Positive items represent an absorption of funds; negative items, a release. Changes in cash balances and in marketable securities can be calculated from figures in columns 2 and 3, page 114.

[c] Including investments.

Table D-2 (concluded)—SELECTED FINANCIAL DATA FOR SAMPLES OF LARGE MANUFACTURING CORPORATIONS (*in millions*)

Year	*Sample C*[a]					
	Year-End Cash Balances (23)	Year-End Marketable Securities (24)	Changes in Total Funds[b] (25)	Net Income (26)	Cash Dividends (27)	Changes in Funds from Outside (28)
1914	$144	$20	...	...	...	...
1915	195	91	$410	$372	$101	$139
1916	303	163	514	647	206	73
1917	362	356	925	652	228	501
1918	381	421	752	510	191	433
1919	378	279	260	465	155	-50
1920	337	244	456	451	165	170
1921	301	245	-280	175	165	-290
1922	329	240	111	303	155	-37

Year	Absorption or Release of Funds by Major Asset Classes[c]				
	Operating Assets (29)	*Fixed Property* (30)	*Inventory* (31)	*Receivables* (32)	*"Other" Assets*[d] (33)
1915	$246	$116	$51	$79	$42
1916	317	97	157	63	17
1917	645	216	324	105	27
1918	607	170	279	158	60
1919	304	244	30	30	102
1920	500	308	104	88	48
1921	-272	156	-260	-168	28
1922	87	160	-5	-68	5

---

[a] For description of sample see Appendix A.

[b] Equity (adjusted) plus debt. Column 26 plus 28 minus 27.

[c] Positive items represent an absorption of funds; negative items, a release.

[d] Including investments.

Table D-3—Selected Financial Data for Sample of Medium-Sized and Small Manufacturing Corporations[a]

(in thousands)

Year	Year-End Cash Balances (1)	Year-End Investments[b] (2)	Annual Cash Payments[c] (3)	Transaction Cash[d] (4)	"Free" Cash[d] (5)
1916	$864	$712	...	...	...
1917	602	1,416	$27,499	$1,265	$–532
1918	1,101	2,516	32,291	1,485	–634
1919	1,126	3,172	34,443	1,584	–471
1920	1,728	4,793	50,623	2,329	–902
1921	1,206	3,773	32,276	1,485	–18
1922	1,460	3,881	35,530	1,634	–301
1923	1,897	4,768	37,606	1,730	–52
1924	1,731	4,967	38,670	1,779	35
1925	1,750	5,612	39,147	1,801	–60
1926	2,125	6,245	41,579	1,913	25
1927	2,079	6,750	41,542	1,911	191
1928	2,117	7,952	41,671	1,917	181
1929	1,818	7,955	39,821	1,832	136
1930	1,728	8,164	35,439	1,630	143
1931	1,743	8,671	25,771	1,186	550
1932	1,302	8,604	18,066	831	691
1933	1,418	8,757	18,654	858	502
1934	1,441	7,850	21,445	987	443
1935	1,310	7,822	24,906	1,146	230
1936	1,366	7,646	30,143	1,387	–49
1937	1,434	6,922	33,764	1,553	–156
1938	1,858	6,818	26,886	1,237	396
1939	1,896	6,712	30,865	1,420	421
1940	2,237	5,985	36,136	1,662	379
1941	3,109	6,372	49,069	2,257	418
1942	4,019	7,124	56,910	2,618	949

[a] For description of sample see Appendix A.

[b] Includes marketable securities.

[c] For description of method of estimating data see Appendix C.

[d] For description of method of estimating data see pages 40-41.

Table D-3 (*continued*)—SELECTED FINANCIAL DATA FOR SAMPLE OF MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS[a] (*in thousands*)

Year	Changes in Total Funds[b] (6)	Net Income (7)	Cash Dividends (8)	Changes in Funds from Outside (9)
1917	$3,808	$3,390	$1,608	$2,026
1918	2,157	3,106	1,421	472
1919	2,707	3,621	1,358	444
1920	8,056	6,460	1,494	3,090
1921	–1,304	–1,227	866	789
1922	884	384	1,466	1,966
1923	2,076	3,659	1,664	81
1924	2,300	2,491	1,547	1,356
1925	1,847	3,492	1,797	152
1926	1,692	3,699	2,336	329
1927	994	3,828	2,624	–210
1928	1,275	2,936	2,615	954
1929	712	3,309	2,531	–66
1930	–1,545	367	2,016	104
1931	–2,652	–837	1,290	–525
1932	–3,912	–2,310	585	–1,017
1933	141	–483	551	1,175
1934	–1,748	–20	926	–802
1935	–945	–240	753	48
1936	1,278	929	918	1,267
1937	563	941	1,105	727
1938	–1,374	110	813	–671
1939	–567	222	832	43
1940	997	1,727	888	158
1941	4,289	3,011	1,110	2,388
1942	2,937	2,488	1,094	1,543

[a] For description of sample see Appendix A.

[b] Equity (adjusted) plus debt. Column 7 minus 8 plus 9.

Table D-3 (concluded)—SELECTED FINANCIAL DATA FOR SAMPLE OF MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS[a] *(in thousands)*

	Absorption or Release of Funds by Major Asset Classes[b]				
Year	*Operating Assets* (10)	*Fixed Property* (11)	*Inventory* (12)	*Receivables* (13)	*"Other" Assets* (14)
1917	$3,515	$1,167	$2,476	$ –128	$ –62
1918	594	495	144	–45	–68
1919	1,831	620	–250	1,461	169
1920	5,625	2,687	2,322	616	221
1921	–161	1,582	–332	–1,411	–58
1922	447	177	–943	1,213	44
1923	1,203	763	774	–334	–26
1924	2,192	1,320	320	552	193
1925	1,073	41	310	722	136
1926	746	601	66	79	–29
1927	408	1,087	89	–768	147
1928	96	–159	–39	294	40
1929	836	–100	4	932	182
1930	–1,553	–36	–428	–1,089	–150
1931	–3,196	–939	–1,249	–1,008	10
1932	–3,401	–834	–1,685	–882	–19
1933	487	–842	765	564	–120
1934	–1,126	–881	–101	–144	108
1935	–484	–1,050	222	344	–365
1936	1,275	–82	689	668	27
1937	1,150	–110	1,092	168	66
1938	–1,846	–657	–789	–400	54
1939	–377	–778	–69	470	15
1940	603	–275	389	489	281
1941	3,456	424	1,838	1,194	–7
1942	401	–241	647	–5	410

[a] For description of sample see Appendix A.

[b] Positive items represent an absorption of cash; negative items, a release. Data for cash balances and investments including marketable securities can be calculated from figures in Columns 1 and 2, page 119.

Table D-4—SELECTED FINANCIAL DATA FOR SAMPLES OF LARGE TRADE CORPORATIONS
(*in millions*)

Year	*Sample A* [a]			*Sample B* [a]		
	Year-End Cash Balances (1)	Year-End Marketable Securities (2)	Annual Cash Payments (3)	Year-End Cash Balances (4)	Year-End Marketable Securities (5)	Annual Cash Payments (6)
1914	...	...	...	$11	...	...
1915	...	...	...	17	...	$312
1916	...	...	...	10	...	399
1917	...	...	...	12	$3	480
1918	...	...	...	16	9	515
1919	...	...	...	30	14	632
1920	...	...	...	18	14	819
1921	$27	$20	...	34	16	568
1922	24	19	$595	29	14	634
1923	24	11	738	...	...	...
1924	42	11	783	...	...	...
1925	39	12	958	...	...	...
1926	57	23	1,078	...	...	...
1927	50	25	1,209	...	...	...
1928	58	15	1,456	...	...	...
1929	85	20	1,764	...	...	...
1930	89	20	1,588	...	...	...
1931	55	49	1,467	...	...	...
1932	72	36	1,274	...	...	...
1933	67	34	1,313	...	...	...
1934	101	18	1,474	...	...	...
1935	85	13	1,680	...	...	...
1936	98	17	1,950	...	...	...
1937	99	13	2,046	...	...	...
1938	140	10	1,921	...	...	...
1939	115	14	2,191	...	...	...
1940	138	7	2,376	...	...	...
1941	160	73	2,996	...	...	...
1942	236	217	3,167	...	...	...
1943	200	263	3,251	...	...	...

[a] For description of sample see Appendix A.

Table D-5—SELECTED FINANCIAL DATA FOR SAMPLE OF MEDIUM-SIZED AND SMALL TRADE CORPORATIONS[a] (*in thousands*)

Year	Year-End Cash Balances (1)	Year-End Investments[b] (2)	Annual Cash Payments (3)
1916	$191	$11	...
1917	216	86	$10,997
1918	184	184	11,730
1919	258	209	14,404
1920	264	239	18,155
1921	251	234	13,474
1922	276	183	12,744
1923	199	193	14,177
1924	223	183	14,236
1925	260	213	14,319
1926	261	204	14,112
1927	244	159	14,431
1928	225	152	14,873
1929	260	214	14,954
1930	262	193	13,882
1931	238	202	12,093
1932	266	247	10,058
1933	240	269	9,606
1934	184	254	10,998
1935	214	263	12,279
1936	217	222	12,652
1937	210	241	12,814
1938	304	230	11,263
1939	290	221	11,621
1940	283	264	13,738
1941	293	284	15,722
1942	683	369	17,508

[a] For description of sample see Appendix A.

[b] Includes marketable securities.

APPENDIX E

SOURCES AND DESCRIPTIONS OF SERIES IN CHARTS

Chart 1—Total means of payment includes demand and time deposits, excluding government deposits, of all banks (including savings banks) and currency in circulation outside banks; figures are from *Banking and Monetary Statistics* (Board of Governors of Federal Reserve System, 1943), p. 34, and *Federal Reserve Bulletin.* Series for cash balances are from annual issues of *Statistics of Income* (U. S. Treasury). Data are plotted on logarithmic vertical scale. Unit: billion dollars.

Chart 2—Ratios are based on data presented in Chart 1.

Chart 3—Indexes (1926-29 = 100) for total means of payment and cash balances of all reporting corporations are based on data presented in Chart 1. Samples of large and of medium-sized and small manufacturing corporations are described in Appendix A. Straight lines shown on the chart are trend lines described in text, page 13.

Chart 4—Samples on which chart is based are described in Appendix A. Data are plotted on logarithmic vertical scale. Unit: billion dollars.

Chart 5—The samples presented on the chart are described in Appendix A. For description of operating assets see Appendix B. Unit: billion dollars.

Chart 6—For description of samples see Appendix A. The items included in series for total funds are listed on page 23. Unit: billion dollars.

Charts 7, 8, 9—The samples and data presented in the charts are described in Appendices A and C. Unit: billion dollars.

Chart 10—Average cash balances are moving averages of year-end data for two successive years. The payments figures and the sample are described in Appendices A and C. Data are plotted on logarithmic vertical scale. Unit: billion dollars.

Chart 11—For description of cash balances and payments data see Chart 10; samples are described in Appendix A.

Charts 12, 13—Cash balances are moving averages of year-end data for two successive years. Methods of estimating transaction cash and "free" cash are outlined in text, pages 40-41. Descriptions of samples are presented in Appendix A. Unit: Chart 12, billion dollars; Chart 13, million dollars.

Chart 14—Total liquid funds are sum of cash and marketable securities. Methods of estimating liquid funds for transaction purpose and "free" liquid funds are described in text, page 49. For description of sample see Appendix A. Unit: billion dollars.

Chart 15—For description of "free" cash, see text, page 41; for description of sample see Appendix A. Unit for "free" cash: billion dollars.

Charts 16, 17, 18—For description of samples see Appendix A. Data in Chart 16 are plotted on logarithmic vertical scale; unit, million dollars.

Chart 19—Cash balances are moving averages of year-end data for two successive years. The payments figures and the samples are described in Appendices A and C. Figures for Sample B are presented for the period 1915-22; and for Sample A, 1922-43. Data are plotted on logarithmic vertical scale. Unit: billion dollars.

Chart 20—Data for 1915-22 are for Sample B, and those for 1922-43, for Sample A; for description of samples see Appendix A.

Charts B1, B2—For description of samples see Appendix A. Unit: billion dollars.

INDEX

AMERICAN INSTITUTE OF ACCOUNTANTS—73, 73n, 76n.

ASSETS, MANUFACTURING CORPORATIONS—N.B.E.R. Samples Compared with All Manufacturing Corporations, 2-3.

ASSETS, "OPERATING"—*See* "OPERATING" ASSETS.

BALANCE SHEET DATA—Composite Balance Sheet, 45 Large Manufacturing Corporations, 77-78; Limitations, 9n, 72-73; Percentage of Corporations Reporting, 9n.

BANK DEBT—Influence on Cash Balances, 12, 18-19, 27, 28, 51-54; Of Large Manufacturing Corporations, 27, 28, 52-53, 107; Of Large Trade Corporations, 97, 98, 99; Of Medium-Sized and Small Manufacturing Corporations, 28.

BOARD OF GOVERNORS OF FEDERAL RESERVE SYSTEM—83n, 85n, 101n.

BOEING AIRCRAFT COMPANY—74n.

BONDS—Retirements and "Free" Cash, 51.

BORROWING NEEDS—For Reconversion Purposes, 87-92.

BORROWING OPPORTUNITIES—And Cash Balances, 38-39; And Postwar Reconversion, 90.

BURR, S. S.—13n.

BUSINESS PROSPECTS—And Cash Balances, 39.

BUSINESS VOLUMES—Effect on Reconversion Expenses, 87.

CASE, J. I.—74n.

CASH BALANCES, ALL CORPORATIONS—Balance Sheet Data, World War II, 72-73; Compared with Consumers' Cash Balances, 11-13; Comparisons of Subgroups, 7-8, 13-16; Cyclical Pattern, 9-13, 17-20; Importance of, 1-2; Related to Cash Requirements, 37-39; Related to Other Assets, 17-20; Related to Total Means of Payment, 9-13.

CASH BALANCES, ALL MANUFACTURING CORPORATIONS—And Bank Debt, 12, 18-19, 51-54; And Borrowing Opportunities, 38-39; And Business Prospects, 39; Compared with Value of Product, 15; Comparisons of Subgroups, 7-8, 13-16; Cyclical Pattern, 9-13; And Investment Opportunities, 38; And Precautionary Motive, 39; Related to Total Means of Payment, 9-13, 15; Seasonal Fluctuations, 37, 38, 39; Velocity of Circulation, 37-38.

CASH BALANCES, ALL NONFINANCIAL CORPORATIONS—Cyclical Pattern, 9-13; Related to Total Means of Payment, 9-13.

CASH BALANCES, CONSUMERS'—Compared with All Corporations, 11-13; Estimates of, 11n.

CASH BALANCES, LARGE MANUFACTURING CORPORATIONS—And Bank Debt, 27, 28, 52-53, 107; Compared with Other Size Groups, 13-16; Cyclical Pattern, 7, 23-28, 42; In Interwar Period, 23-28, 30-36, 40-49, 51-59, 60-66; And Postwar Reconversion, 85-91; Related to Cash Requirements, 37-39; Related to Other Assets, 23-28; Related to Payments, 30-36, 42-49, 62-66, 67-70, 78-82; Related to Receipts and Expenditures, 30-36; Related to Total Means of Payment, 13, 68, 78; Velocity of Circulation, 42-44; World War I, 67-71; World War II, 3-4, 72-84.

CASH BALANCES, MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS—Cyclical Pattern, 7, 28-29; Interwar Period, 28-29; Related to Cash Payments, 44, 69-71, 82-84; Related to Cash Requirements, 37-39; Related to Other Assets, 28-29; World War I, 70-71; World War II, 82-84.

CASH BALANCES, TRADE CORPORATIONS—93-102.

CASH EXPENDITURES—*See* CASH PAYMENTS.

CASH, "FREE"—*See* "FREE" CASH.
CASH INFLOWS AND OUTFLOWS—20-23.
CASH LIQUIDITY—*See* LIQUIDITY POSITION.
CASH PAYMENTS—Coincidence of Receipts and Payments, 37-38; Composition of Nonoperating Expenditures, 33; Cyclical Movements, 33-35, 42; Method of Estimating, 111-12; Relationship with Cash Balances, 30-36, 42-49, 62-66, 67-71, 77-84, 93-102.
CASH RECEIPTS—Coincidence of Receipts and Payments, 37-38; Composition of "Other" Cash Receipts, 33; Cyclical Movement, 33-35; Method of Estimating, 112; Relationship with Cash Balances, 30-36.
CASH, "TRANSACTION"—*See* "TRANSACTION" CASH.
CHUDSON, WALTER A.—52n.
COMMITTEE FOR ECONOMIC DEVELOPMENT —90n.
CONTRACT SETTLEMENT ACT OF 1944—74.
CORPORATE FUNDS—*See* FUNDS, CORPORATE.

DEFENSE PLANT CORPORATION—76.
DIRKS, FREDERICK C.—87n.
DIVIDEND PAYMENTS—Cyclical Changes, 12, 107-9; And "Free" Cash, 59.

EARNINGS, RETAINED—76-77.
EBERSOLE, J. F.—13n.
EXPENDITURES—*See* CASH PAYMENTS.

FIXED EQUIPMENT—Changes During Business Contraction and Expansion, 17-20, 107; Postwar Reconversion, 75-76, 89-90.
"FREE" CASH—Definition of, 41; And Dividend Payments, 59; Factors Influencing Holdings, 51-59; Method of Estimating, 40-42.
"FREE" CASH, LARGE MANUFACTURING CORPORATIONS—And Bank Debts, 51-54; Interwar Period, 44-50; World War I, 68-69; World War II, 77-80; Correlation with Profit Rate, 5, 54-55; And Dividend Payments, 59; And Marketable Security Holdings, 56-59.
"FREE" CASH, MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS—Interwar Period, 44-49; World War I, 70-71; World War II, 82-84.
"FREE" CASH, TRADE CORPORATIONS—96-101.
"FREE" LIQUID FUNDS—Definition of, 49; Limitations of Data, 49; Method of Estimating, 49.
"FREE" LIQUID FUNDS, LARGE MANUFACTURING CORPORATIONS—Interwar Period, 49; World War I, 69-70; World War II, 79-82.
"FREE" LIQUID FUNDS, MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS—World War I, 70-71; World War II, 82-84.
"FREE" LIQUID FUNDS, TRADE CORPORATIONS—97-101.
FUNDS, CORPORATE—Cyclical Changes, 17-29, 107; And Postwar Reconversion, 88-92.

GENERAL MOTORS CORPORATION—Employment Estimates, 87.
GOVERNMENT CONTRACTS—Renegotiation, 75-76, 80-81.

INCOME NET—In Corporation Statements During War Years, 76, 76n.
INFLATION—90-91.
INTEREST RATES — And Corporation Holdings of Marketable Securities, 58.
INVENTORIES—Changes During Business Contraction and Expansion, 12, 17, 23, 107; Influence on Current Receipts or Disbursements, 33-35; Financial Provision for Postwar Losses, 74; As Liquid Assets, 64; And Reconversion Problems, 89-90.
INVESTMENT OPPORTUNITIES—And Cash Balances, 38.

KAPLAN, A. D. H.—90n.
KISSELGOFF, A.—41n, 56n.
KOCH, ALBERT R.—2n.

LIQUID FUNDS—Interwar Period, 49, 56-59, 93-98; World War I, 67-71, 98-99; World War II, 72-84, 100-102. *See also* "FREE" LIQUID FUNDS.
LIQUIDITY POSITION, LARGE MANUFACTURING CORPORATIONS—Interwar Period, 44-50; World War I, 4, 67-71; World War II, 72-84, 85-92.
LIQUIDITY POSITION, MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS —Interwar Period, 44-50; World War I, 70-71; World War II, 82-84.
LIQUIDITY POSITION, TRADE CORPORATIONS

—Interwar Period, 93-98; World War I, 4, 6, 98-99; World War II, 6, 100-101.
LIQUIDITY RATIOS—And Cash Balances, 60-66; Large and Medium-Sized and Small Manufacturing Corporations Compared, 63; Interwar Years, 42-50, 93-98; Limitations of, 40, 63-65; Stability of, 60-61; World War I, 67-71, 98-99; World War II, 72-84, 100-102.
LIVINGSTON, S. MORRIS—87n.

MANUFACTURING CORPORATIONS — Cash Balances Compared with Value of Product, 15; Descriptions of Samples, 103-5; Importance in the Economy, 13-14, 16; Sales Compared with Value of Product, 13-15.
MARKETABLE SECURITIES — Composition of, 56; Importance Among Corporations' Assets, 4, 69-70; And Liquidity Position of Corporations, 49, 56-59, 65, 69-71, 79-84, 97-101.
MARKETABLE SECURITIES, LARGE MANUFACTURING CORPORATIONS — Interwar Period, 26, 56-59; Related to "Free" Cash, 56-59; World War I, 69-70; World War II, 79-82.
MARKETABLE SECURITIES, MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS—World War I, 70-71; World War II, 82-84.
MARKETABLE SECURITIES, TRADE CORPORATIONS—97-101.

NONOPERATING EXPENDITURES—Composition of, 33; Method of Estimating, 111.
NOTES PAYABLE—Large Manufacturing Corporations, 52; As Measurement of Bank Debt, 52-53.

"OPERATING" ASSETS—Cyclical Pattern, 17-20, 23-29, 107-8; Description, 17-18, 107.
OPERATING EXPENDITURES—Method of Estimating, 111.

PAYMENTS, CASH—*See* CASH PAYMENTS.
PAYMENT, TOTAL MEANS OF—And Corporate Cash Balances, 9-16, 68, 77, 100; Description, 9.
PETERSON, G. M.—13n.
PLANT AND EQUIPMENT—Reserves for Postwar Conversion, 74.
PRECAUTIONARY MOTIVE—Influence on Cash Balances, 39.
PRODUCTION FACTORS—And Rapidity of Reconversion, 88-90.
PROFIT RATE—Correlation with "Free" Cash, 5, 54-55.

RECONSTRUCTION FINANCE CORPORATION—76.
RECONVERSION EXPENSES—Factors Affecting Estimates of, 87-92.
RECEIPTS—*See* CASH RECEIPTS.
RECEIVABLES—Cyclical Changes, 17, 23, 107-8; Influence on Liquidity Ratios, 60; As Liquid Assets, 64.
RECONVERSION PROBLEMS—And Liquidity Position, Manufacturing Corporations, 85-92; Trade Corporations, 101.
RESERVES, CORPORATION—Function of Special Reserves, 75-78; World War I, 67; World War II, 73-84.

SALES—Balance Sheet Reports, World War II, 72-73; Compared with Value of Total Manufacturing Output, 13-15; During Reconversion Period, 86.
SCHMIDT, CHARLES H.—2n, 3n, 67n.
SECURITIES AND EXCHANGE COMMISSION—74, 74n, 78n, 87n.
SOURCES AND USES OF FUNDS ANALYSIS—20-23, 87-88, 100-101.

TAX LIABILITIES—42, 80-82, 84, 86.
TRADE CORPORATIONS—Description of Samples, 104-5.
"TRANSACTION" CASH—Definition of, 41; Interwar Period, 42-49; Method of Estimating, 40-42.
TRANSACTION PURPOSE—Effect on Cash Balances, 39.

VELOCITY OF CIRCULATION OF CASH BALANCES—5, 37-38, 42-44.

WAR CONTRACT TERMINATION—86, 86n.
WEILER, E. T.—87n.

YOUNG, RALPH A.—2n, 3n, 67n.

PUBLICATIONS OF THE NATIONAL BUREAU OF ECONOMIC RESEARCH

	INCOME IN THE UNITED STATES Wesley C. Mitchell, W. I. King, F. R. Macaulay, and O. W. Knauth	
*1	Volume I, SUMMARY (1921)	152 pp.
*2	Volume II, DETAILS (1922)	420 pp.
*3	DISTRIBUTION OF INCOME BY STATES IN 1919 (1922) O. W. Knauth	30 pp.
*4	BUSINESS CYCLES AND UNEMPLOYMENT (1923) National Bureau Staff and Sixteen Collaborators	405 pp.
*5	EMPLOYMENT, HOURS AND EARNINGS, UNITED STATES, 1920-22 (1923) W. I. King	147 pp.
6	THE GROWTH OF AMERICAN TRADE UNIONS, 1880-1923 (1924) Leo Wolman	170 pp., $2.50
*7	INCOME IN THE VARIOUS STATES: ITS SOURCES AND DISTRIBUTION, 1919, 1920, AND 1921 (1925) Maurice Levin	306 pp.
8	BUSINESS ANNALS (1926) W. L. Thorp, with an introductory chapter, "Business Cycles as Revealed by Business Annals," by Wesley C. Mitchell	380 pp., $2.50
9	MIGRATION AND BUSINESS CYCLES (1926) Harry Jerome	256 pp., $2.50
10	BUSINESS CYCLES: THE PROBLEM AND ITS SETTING (1927) Wesley C. Mitchell	489 pp., $5.00
*11	THE BEHAVIOR OF PRICES (1927) Frederick C. Mills	598 pp.
12	TRENDS IN PHILANTHROPY (1928) W. I. King	78 pp., $1.00
*13	RECENT ECONOMIC CHANGES (1929) National Bureau Staff and Fifteen Collaborators	2 vols., 950 pp.
	INTERNATIONAL MIGRATIONS	
*14	Volume I, STATISTICS (1929), compiled by Imre Ferenczi of the International Labour Office, and edited by W. F. Willcox	1,112 pp.
*18	Volume II, INTERPRETATIONS (1931), edited by W. F. Willcox	715 pp.
*15	THE NATIONAL INCOME AND ITS PURCHASING POWER (1930) W. I. King	394 pp.
16	CORPORATION CONTRIBUTIONS TO ORGANIZED COMMUNITY WELFARE SERVICES (1930) Pierce Williams and F. E. Croxton	347 pp., $2.00
17	PLANNING AND CONTROL OF PUBLIC WORKS (1930) Leo Wolman	260 pp., $2.50
*19	THE SMOOTHING OF TIME SERIES (1931) Frederick R. Macaulay	172 pp.
*20	THE PURCHASE OF MEDICAL CARE THROUGH FIXED PERIODIC PAYMENT (1932) Pierce Williams	308 pp.
*21	ECONOMIC TENDENCIES IN THE UNITED STATES (1932) Frederick C. Mills	639 pp.
22	SEASONAL VARIATIONS IN INDUSTRY AND TRADE (1933) Simon Kuznets	455 pp., $4.00
*23	PRODUCTION TRENDS IN THE UNITED STATES SINCE 1870 (1934) A. F. Burns	363 pp.

*Out of print.

*24 Strategic Factors in Business Cycles (1934)
J. Maurice Clark — 238 pp.

25 German Business Cycles, 1924-1933 (1934)
C. T. Schmidt — 288 pp., $2.50

26 Industrial Profits in the United States (1934)
R. C. Epstein — 678 pp., $5.00

27 Mechanization in Industry (1934)
Harry Jerome — 484 pp., $3.50

28 Corporate Profits as Shown by Audit Reports (1935)
W. A. Paton — 151 pp., $1.25

29 Public Works in Prosperity and Depression (1935)
A. D. Gayer — 460 pp., $3.00

30 Ebb and Flow in Trade Unionism (1936)
Leo Wolman — 251 pp., $2.50

31 Prices in Recession and Recovery (1936)
Frederick C. Mills — 561 pp., $4.00

32 National Income and Capital Formation, 1919-1935 (1937)
Simon Kuznets — 100 pp., 8¼ x 11¾, $1.50

33 Some Theoretical Problems Suggested by the Movements of Interest Rates, Bond Yields and Stock Prices in the United States Since 1856 (1938)
F. R. Macaulay — 586 pp., $5.00
"The Social Sciences and the Unknown Future," a reprint of the introductory chapter to Dr. Macaulay's volume: 35 cents; in orders of 10 or more, 25 cents.

*34 Commodity Flow and Capital Formation, Volume I (1938)
Simon Kuznets — 500 pp., 8¼ x 11¾

*35 Capital Consumption and Adjustment (1938)
Solomon Fabricant — 271 pp.

36 The Structure of Manufacturing Production, A Cross-Section View (1939)
C. A. Bliss — 234 pp., $2.50

37 The International Gold Standard Reinterpreted, 1914-1934 (1940)
William Adams Brown, Jr. — 2 vols., 1,420 pp., $12.00

38 Residential Real Estate, Its Economic Position as Shown by Values, Rents, Family Incomes, Financing, and Construction, Together With Estimates for All Real Estate (1941)
D. L. Wickens — 320 pp., 8¼ x 11¾, $3.50

39 The Output of Manufacturing Industries, 1899-1937 (1940)
Solomon Fabricant — 700 pp., $4.50

*40 National Income and Its Composition, 1919-1938 (1941)
Simon Kuznets — 2 vols., 980 pp.

41 Employment in Manufacturing, 1899-1939: An Analysis of Its Relation to the Volume of Production (1942)
Solomon Fabricant — 360 pp., $3.00

42 American Agriculture, 1899-1939: A Study of Output, Employment and Productivity (1942)
Harold Barger and Hans H. Landsberg — 435 pp., $3.00

43 The Mining Industries, 1899-1939: A Study of Output, Employment and Productivity (1944)
Harold Barger and Sam H. Schurr — 452 pp., $3.00

*Out of print.

FINANCIAL RESEARCH PROGRAM

I *A Program of Financial Research*

1 REPORT OF THE EXPLORATORY COMMITTEE ON FINANCIAL RESEARCH (1937) 91 pp., $1.00
2 INVENTORY OF CURRENT RESEARCH ON FINANCIAL PROBLEMS (1937) 253 pp., $1.50

II *Studies in Consumer Instalment Financing*

1 PERSONAL FINANCE COMPANIES AND THEIR CREDIT PRACTICES (1940)
Ralph A. Young and Associates 170 pp., $2.00
2 SALES FINANCE COMPANIES AND THEIR CREDIT PRACTICES (1940)
Wilbur C. Plummer and Ralph A. Young 298 pp., $3.00
3 COMMERCIAL BANKS AND CONSUMER INSTALMENT CREDIT (1940)
John M. Chapman and Associates 318 pp., $3.00
4 INDUSTRIAL BANKING COMPANIES AND THEIR CREDIT PRACTICES (1940)
Raymond J. Saulnier 192 pp., $2.00
5 GOVERNMENT AGENCIES OF CONSUMER INSTALMENT CREDIT (1940)
Joseph D. Coppock 216 pp., $2.50
6 THE PATTERN OF CONSUMER DEBT, 1935-36 (1940)
Blanche Bernstein 238 pp., $2.50
7 THE VOLUME OF CONSUMER INSTALMENT CREDIT, 1929-38 (1940)
Duncan McC. Holthausen, in collaboration with Malcolm L. Merriam and Rolf Nugent 137 pp., $1.50
8 RISK ELEMENTS IN CONSUMER INSTALMENT FINANCING (1941)
David Durand 106 pp., $1.50; technical edition, 163 pp., $2.00
*9 CONSUMER INSTALMENT CREDIT AND ECONOMIC FLUCTUATIONS (1942)
Gottfried Haberler 239 pp.
10 COMPARATIVE OPERATING EXPERIENCE OF CONSUMER INSTALMENT FINANCING AGENCIES AND COMMERCIAL BANKS, 1929-41 (1944)
Ernst A. Dauer 250 pp., $3.00

III *Studies in Business Financing*

1 TERM LENDING TO BUSINESS (1942)

x9:6:73:N5 H2

Neil H. Jacoby and R. J. Saulnier 163 pp., $2.00
2 FINANCING SMALL CORPORATIONS IN FIVE MANUFACTURING INDUSTRIES, 1926-36 (1942)
Charles L. Merwin 172 pp., $1.50
3 ACCOUNTS RECEIVABLE FINANCING (1943)
R. J. Saulnier and Neil H. Jacoby 157 pp., $2.00
4 THE FINANCING OF LARGE CORPORATIONS, 1920-39 (1943)
Albert R. Koch 141 pp., $1.50
5 FINANCING EQUIPMENT FOR COMMERCIAL AND INDUSTRIAL ENTERPRISE (1944)
R. J. Saulnier and Neil H. Jacoby 95 pp., $1.50
6 FINANCING INVENTORY ON FIELD WAREHOUSE RECEIPTS (1944)
Neil H. Jacoby and R. J. Saulnier 89 pp., $1.50

CONFERENCE ON RESEARCH IN INCOME AND WEALTH

STUDIES IN INCOME AND WEALTH
Volume I (1937) 368 pp., $2.50
*Volume II (1938) 342 pp.
*Volume III (1939) 500 pp.
Volume IV—Outlay and Income, 1921-1938 (1942)
Harold Barger 376 pp., $2.50

*Out of print.

*Volume V: Income Size Distributions in the United States (1943)	125 pp.
Volume VI: Studies in Income and Wealth (1944)	288 pp., $3.00

CONFERENCE ON PRICE RESEARCH

1	Report of the Committee on Prices in the Bituminous Coal Industry (1938)	144 pp., $1.25
*2	Textile Markets—Their Structure in Relation to Price Research (1939)	304 pp.
3	Price Research in the Steel and Petroleum Industries (1939)	224 pp., $2.00
*4	Cost Behavior and Price Policy (1943)	353 pp.

CONFERENCE ON RESEARCH IN FISCAL POLICY

*Fiscal Planning for Total War (1942) W. L. Crum, J. F. Fennelly, L. H. Seltzer	364 pp.

*Out of print.

NATIONAL BUREAU OF ECONOMIC RESEARCH
1819 Broadway, New York 23, N. Y.

European Agent: Macmillan & Co., Ltd.
St. Martin's Street, London, W.C.2